

The uses and gratifications of beef cattle breed association magazines for United States beef
cattle producers

by

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Abstract

The United States beef industry is a major stakeholder in the current status and future of national and international agriculture. The beef industry is driven by technological innovations and beef producers in all 50 states. Beef cattle breed associations are essential to the success of the industry as they not only maintain breed pedigrees, but also serve as a vital source for information dissemination to their members. The official magazines of beef cattle breed associations are a primary source of communication for United States beef producers. Many beef breed association communication departments are working to strategize the future of their magazines to meet producer demands while minimizing expenses for print production and dissemination. This study sought to determine what information beef producers use beef breed association magazines for; topics beef producers want included in the magazines; differences in the uses and gratifications between junior and adult beef breed association members; differences based on operation characteristics; and producer perceptions of the magazines in a print vs. digital format.

The theoretical framework used to guide this study was the uses and gratifications theory, which focuses on the reason why individuals choose to use a specific communication medium, the effect the medium has on the individual, and the gratifications received through its use. This study, the researcher focused on how United States beef producers use their beef breed association magazines, what information types they want to see more of, and preferences for magazine formats.

The study utilized a descriptive quantitative survey research design to disseminate a Qualtrics questionnaire instrument to members of six United States beef breed associations. Questions included association membership status and association magazines received, how

producers use information from their magazines, what topics beef producers want included in their magazines, operation characteristics, individual participant characteristics, and questions regarding junior beef breed association involvement.

Results of the study revealed the uses and gratifications of beef breed association magazines in survey participant responses. Most United States beef cattle producers prefer their beef breed association magazines in a print format more than a digital version. Differences for using beef breed association print magazines were statistically significant between registered-purebred and cow-calf producers with a maternal trait focus when compared to other herd types and operation characteristics. Additionally, results showed beef producers use beef breed association magazines for information regarding topics of beef improvement strategies and genetic selection. Analysis of topics beef producers want to see more of in beef breed association magazines revealed significance to the findings of this study.

It is recommended beef cattle breed associations continue to produce their magazines in a print format and include editorial topics curated to the needs of the beef producers using their magazines. The results revealed statistically significant uses for the beef breed association magazines regarding topics related to breed associations and should be used to guide the editorial content of the magazines moving forward. Future researchers should perform a content analysis analyzing the editorial content of beef breed association magazines to determine alignment with the results from this study.

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Dedication

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Chapter 1 - Introduction

Overview

This chapter introduces the status of the United States beef industry, identifies and describes the purpose of beef cattle breed associations to the United States beef industry, states the current problem of beef producer communication preferences regarding beef cattle breed associations magazines, and defines key terms to deepen the understanding of the study. Additionally, the chapter outlines limitations to this study and the basic assumptions of the research.

Beef Production in the United States

The United States is home to the world's largest cattle industry and is the largest producer of beef for in-country consumption and exports. Cattle production contributes the largest share of total cash receipts for agricultural commodities making it vital to the United States agricultural industry (Economic Research Service, 2022). Cow-calf production operations exist in all 50 states and are distributed through a vast range of environmental conditions (Drouillard, 2018). The United States produces 91.9 million head of beef cattle on approximately 34,800 operations across the nation (National Agricultural Statistics Service, 2022). Beef cattle operations remain traditional in much of the operational management with the majority being family-owned (Smith, 2013). Additionally, the United States is the global leader in beef consumption. Many beef consumers prefer high-quality, high-value, grain-fed beef (Economic Research Service, 2022). U.S. beef production is technology-driven through the adoption of new innovations such as reproductive management strategies, genetic improvement technologies, vaccines, antibiotics, and exogenous growth promoting compounds to improve efficiency while

decreasing cost of production (Drouillard, 2018). Beef cattle herd productivity is driven by the impacts of genetics and nutrition in the beef production lifecycle (Malau-Aduli et al., 2021).

Communication in the Beef Industry

At the time of this study, there was an absence of beef producer communication preferences in the research literature. However, outreach to beef producers is studied through organizations like Cooperative Extension. A study by Vergot III et al. (2005) studied the preferred communication channels of beef producers in counties of the Northwest Florida Extension district. Beef producers value the opinions of other producers and neighbors which has been consistent in the literature (Vergot et al., 2005; Vergot et al., 1991). Information from Extension agents, veterinarians, and university specialists is highly valued. Veterinarians rank high due to their expertise in cattle herd health maintenance and animal health diagnosis (Vergot et al., 1991). Printed Extension newsletters are the communication channel most often used by beef producers (Vergot III et al., 2005; Vergot et al., 1991). Additionally, cattle farm magazines and Extension bulletins were high-ranking preferred communication channels (Vergot III et al., 2005). Communication practitioners should utilize multiple communication channels to provide beef producers with information on the same topic, as communication channels have a significant impact on learning for beef producers (Vergot III et al., 2005). Mass media is useful when communicating with producers over a wide geographic range (Vergot III et al., 2005; Nehley, 2001) thus, increasing the importance of national information sources for beef producers.

A study by Vehige (2021) found the main channel of beef cattle breed association communication with their membership is their print magazine publications. It is crucial for beef

cattle breed associations to stay updated on effective communication tactics. While digital media is growing in prevalence among beef cattle producers, beef cattle breed associations should utilize diverse communication strategies to meet the needs of their members (Vehige, 2021). Vehige (2021) recommends that beef cattle breed associations distribute their messages across multiple platforms to reach their membership.

Beef Breed Associations

According to the Beef Improvement Federation, a breed association is:

“An organization that maintains pedigree and performance information and arranges for timely genetic evaluation of animals within that breed. Breed associations also establish regulations for registration of animals, promote the breed, and advance the interests of the breeder members” (Parish, 2016).

Purpose of Breed Associations

Beef cattle breed associations promote and develop a particular breed of cattle (ICAR, 2019). Most associations develop breeding goals, a herd book, and promote the breed through sales, media, and events (International Committee for Animal Recording, 2019). Associations provide valuable services to their membership, with the most important being the registration of animals (National Pedigreed Livestock Council, n.d.). Association herd books register cattle in the breed and include the herd identification, date of birth, sex, animal name, parents, and owner, of each animal (International Committee for Animal Recording, 2019). Animals must meet the phenotypic and genotypic criteria set forth by the association (International Committee for Animal Recording, 2019). The pedigrees provided by the breed associations are essential to beef

cattle producers as they provide ancestral knowledge of their animals and necessary information for predicting performance of future progeny (National Pedigreed Livestock Council, n.d.). Beef cattle breed associations utilize their marketing teams to promote their cattle while sharing the story of the beef producer (American Hereford Association, 2019). Additionally, beef cattle breed association invest in seedstock producers by communicating current developments and the advancing the direction of the breed moving forward (American Hereford Association, 2020).

Current Beef Cattle Breed Associations

According to the National Association of Animal Breeders (n.d.), the current United States beef cattle breed associations are: the American Angus Association, American Akaushi Association, American Brahman Breeders Association, American International Charolais Association, American Gelbvieh Association, American Hereford Association, American Highland Cattle Association, American Maine-Anjou Association, American Pinzgauer Association, American Salers Association, American Simmental Association, American Shorthorn Association, Ankole Watusi International Registry, Belted Galloway Society, International Brangus Breeders Association, North American Limousin Foundation, Red Angus Association of America, Santa Gertrudis Breeders International, Texas Longhorn Breeders Association of America, and United Bradford Breeders. Additionally, the National Pedigreed Livestock Council (2017) identifies the following as United States beef cattle breed associations: American Chianina Association and the North American Piedmontese Association.

Communication with Members

Beef breed associations communicate with their members through both online communication channels and print materials (L. Bryant, personal communication, November 10, 2022). Many breed associations will utilize multiple social media channels (Facebook, Instagram, Twitter, Snapchat, YouTube, etc.), eBlasts, filmed TV episodes and an updated website. Many associations launch advertising campaigns that highlight the best qualities of their breed or producers to encourage other producers to start raising cattle of the breed for the same benefits. The messages will be posted to their many social media channels and will generally be sponsored to reach a larger audience. The associations will also highlight opportunities for producers to maximize profit through branded programs their association offers to either produce elite females or gain a larger profit in feeder cattle (L. Bryant, personal communication, November 10, 2022). Additionally, associations utilize print materials through their monthly magazines, production sale catalogs and postcards. The main piece of print communication from every association is their breed magazine highlighting editorial pieces and advertisements from producers. For many producers, the magazine will be a statement piece on their coffee table that will be picked up multiple times until the next edition reaches their mailbox (L. Bryant, personal communication, November 10, 2022). During sale seasons, production catalogs will fill the mailboxes of every member and gives each association multiple touchpoints for communicating with producers who are current members and producers who are potential members. Each catalog presents a new opportunity the association can capitalize on (L. Bryant, November 10, 2022).

Statement of the Problem

Farm and farm characteristics influence use of information sources and vary across the source of use (Jensen et al., 2009). Gloy et al. (2000) concluded livestock producers prefer a livestock-specific publication over a general farm publication as a source of information. Additionally, farm size and type of enterprise affect farmer information demand (Jones et al., 1989).

Larger farms and higher-income producers are gaining significance in the United States thus, access to appropriate information becomes a major issue for these specialized producers making management decisions (Brunn & Raitz, 1978). Agriculture magazines that include topics of general national agricultural practices are lacking the information that high-income producers need for profitable decision-making (Brunn & Raitz, 1978). The demand for journals that are specialized to a livestock breed is growing as high-income producers are specializing their operations (Brunn & Raitz, 1978). Farmers with lower farm incomes are less likely to use livestock magazines as information sources (Jensen et al., 2009). Important and influential information regarding new ideas in agriculture for the farmer is derived from specialized magazines (Brunn & Raitz, 1978).

Beef producers can continuously use print magazines for long periods of time (L. Bryant, personal communication, November 10, 2022). Print magazines that are tailored to the needs and interests of the target audience can be used effectively to facilitate decision making, encourage adoption of new technologies, discuss sustainability, and provide information on risks and uncertainties involved with new management practices. Print media will attract the attention of the targeted users when they address the real problems faced by beef producers (Farooq et al., 2007). Additionally, a study by Ytre-arne (2011) found that many magazine users prefer a print

magazine as they are tired of reading on screens from work and want to physically hold the magazines in their hands. However, digital magazines are gaining popularity among users and continue to evolve (Karan et al., 2016; Royal, 2008). One study by Arbuckle Jr. and Wall (2017) found that digital publications were the most preferred means of gathering information online for agricultural producers.

Magazine availability is growing in popularity; however, there is no one solution to deciding whether a magazine should be print-based, digital-only, or available to the target audience in both forms (Holmes, 2018). Brunn and Raitz (1978) expressed the need to further research regarding the information channels used by large, high-income production operations and the extent they influence decisions made by small, less-wealthy operations. Thus, this study sought to understand how producers of varying operation sizes and breeds, across the United States, use beef breed association magazines.

Print magazines are one of the largest expenses beef breed association communication departments face during the fiscal year (L. Bryant, personal communication, November 10, 2022). With the cost of printing and postage continuously on the rise, many associations are searching for ways to make their print publications more strategic to make the money spent worth it. Beef breed associations need to know their audience consuming the information in their magazines to make the best decisions for their association magazines moving forward (L. Bryant, personal communication, November 10, 2022).

Purpose of Study

The purpose of this study was to determine the information beef producers use from the magazines published by their beef breed associations and what type of information they want to

see more of in their association magazines. The researcher wanted to know why beef producers are using the magazines and what information they gain through their use. The study sought to determine how beef breed association communications staff can more strategically meet the needs of their magazine readership. The results of this study will allow beef breed associations to better understand the readership of their magazines and tailor the editorial content to their members.

Furthermore, the study sought to determine how the use of beef breed association magazines differs for operations such as operation size and respondent's role in the operation. Are members with larger herds using the magazines in a different way than members with smaller herds? Are members who are the operator of the herd using the magazine the same or different from a member who is the owner of the herd? The seedstock beef industry sets the tone and direction of the beef industry as operation decisions impacts cattle production for 10 years (McKinnon & Snodgrass, 2009). Thus, understanding the different operation types and sizes, can determine the information desired by beef cattle breed association membership and influence editorial content decisions.

Finally, the study wanted to determine the perceptions of beef producers regarding the use of their print or digital beef breed association magazines. To print or not to print is a large debate in the communications industry (Herring & Rost, 2007). Additionally, the study wanted to determine the value beef producers receive from their print magazines or digital magazines and what perceptions they had regarding their use.

Research Objectives

The research objectives that guided this study are as follows:

1. Determine the information beef producers are receiving through the use of their beef breed association magazines.
2. Determine topics beef producers want communicated to them via magazines from their breed association.
3. Determine the differences in uses and gratifications of beef breed association magazine use based on operation characteristics.
4. Determine producer perceptions and use of print vs. digital beef breed association magazines.

Significance of the Study

Agricultural communicators must understand the quality of information available to beef producers as it will impact the decision making of the producers and how the production practices will be implemented (Brunn and Raitz, 1978, Hart, 1975).

Definitions of Terms

Association Events – Production sales, feeder calf sales, livestock shows, and membership meetings (American Hereford Association, 2017).

Association Marketing Programs – Programs created by breed associations to add-value to breed genetics and increase breed influence. (Red Angus Association of America, 2022).

Association News – For this study, association news is any press release or association updates presented to association members in the official magazines of the association.

Backgrounder Operation – Relatively young, lightweight cattle are often combined from multiple sources for a growing phase before sending them to a finishing facility. Backgrounding is often the production phase between weaning and placement into a feedyard for finishing. Often, stocker cattle are grazed on available forages, but animals may also be confined to a drylot and fed grain-based rations (Thomson & White, 2006).

Branded Beef Programs – Programs that have specifications for quality grades, yield grades, additional carcass attributes, and live animal characteristics that create consistent products and provides differentiation to the consumer in the marketplace. Also referred to as, certified beef programs (Scheffler et al., 2021).

Breed Improvement Strategies – Strategies to improve the efficiency of cattle in a specific breed through genetic selection and management decisions (Terry et al., 2020).

Carcass Traits – Actual measurements or physical descriptions of carcasses are usually restricted to five factors: quality grade, yield grade, carcass weight, ribeye area, and fat thickness (Drake, 2004)

Composite/hybrid – A breed made up of combinations of other breeds (Parish, 2016).

Co-Owner – An individual who owns the cattle of a specific herd with another individual (Law Insider, n.d.)

Cow-calf Operation – Cow-calf operations mainly maintain a herd of beef cows for raising calves. Most calves are born in the spring and weaned at 3 to 7 months. Following the weaning stage, calves can move through the value chain in several different ways (USDA, 2022).

Crossbred – The mating of animals of different breeds or subspecies, frequently resulting in heterosis (hybrid vigor) for many economically important traits (Parish, 2016).

Current Event Happenings – Current events are important political or social events that are happening in the world now (Cambridge Dictionary, n.d.). For this study, current events are important events effecting the current status of the beef industry.

Digital Magazine – A designed sequence of brand topic related, and edited content elements published digitally in a logical linear navigation view or flow based on user experience including issue contents or visual navigation, capable of user interaction and social media sharing (Blankenship, 2017). For this study, a digital version of the beef breed association publications.

Feedlot Operation – A feedlot is the final stage of cattle production. It provides a confined area for feeding steers and heifers on a ration of grain, silage, hay, and/or protein supplements to produce a carcass that will meet the USDA quality grade Select or better for the slaughter market (USDA, 2022).

Foundation Opportunities – Opportunities for beef producers to encourage, recognize and reward the development of skills and values in the next generation of beef producers through scholarship, educational and leadership opportunities. (Hereford Youth Foundation of America, 2022).

Genetic Selection – Breeding profitable cattle is a task that requires balancing many genetic traits that are often correlated. To make genetic decisions easier for the producer, beef breed associations have developed a variety of economic selection indexes tailored to specific production contexts (UT Beef & Forage Center, 2022).

Growth Traits – Weaning and yearling weights are commonly recorded traits of growing animals for genetic evaluation programs (Welk et al., 2021).

Junior Activities – Programs and activities created for junior breed association members to strengthen their knowledge of the beef industry and develop life skills (Red Angus Association of America, 2022).

Maternal Traits – Characteristics only expressed by females including milk production and traits related to female fertility such as age at first calving and calving interval (Moore, 2011).

Member Services – A department in beef breed associations that maintain membership data, animal records, magazine subscriptions, and animal data reports for breeders (Red Angus Association of America, 2022).

Nutrition Guidance – Proper nutrition and feed management are essential components of beef production. Nutrition guidance provides producers with information on ration building, available supplements, and maximizing animal productivity in various climate conditions (Penn State Extension, n.d.).

Operator – An individual who makes most of the day-to-day decisions about the beef cattle operation. The operator does not have to have ownership in a beef cattle operation (ERS, 1995).

Owner – An individual who owns the cattle of a specific herd (Law Insider, n.d.).

Print Magazine – A page layout designed sequence of brand topic related and edited content elements printed and bound as a completed periodic edition (Blankenship, 2017). For this study, a printed version of the beef breed association publications.

Producer Success Stories – For this study, producer success stories are stories published in beef breed association magazines highlighting innovative producers who have improved their operations.

Purebred – Non-registered – Cattle are raised in the same manners as registered purebred cattle; however, these animals do not have a registration paper with trait records (Farm Credit of the Virginias, 2020).

Purebred – Registered – Cattle are raised to produce breeding stock to be sold into other purebred or commercial operations. Purebred cattle are managed intensively with records kept on weight, reproduction, and many other traits. Most purebred breeders belong to a breed association which records all information on cattle of a specific breed and generates performance information on the cattle with producers receiving a registration paper on their animals (Farm Credit of the Virginias, 2020).

Sale Advertisements – Beef producers promote their production offerings through printed advertisements in breed association publications to reach their potential customers (Parish et al., 2018).

Seedstock Operation – Producers whose primary goal is to produce breeding stock rather than animals for feeding and slaughter. Progressive seedstock breeders have comprehensive programs designed to produce animals with optimum genetic merit for the combination of traits to increase downstream profit of commercial beef production (Parish, 2016).

Showman – An individual who exhibits cattle at livestock shows. A showman is responsible for preparing their animal for exhibition through daily care, animal selection, and halter breaking (Dawson County Extension, 2017).

Show Champions – Animals who were selected as the overall grand champion or breed champions at a livestock show (Sunglo Feeds, n.d.).

Technology Advancements – Beef cattle producers use technologies to improve animal performance and well-being to increase the profitability of their operations. Important technologies that have been adopted include antibiotics, implants, ionophores, parasiticides, genetics, vaccines, psychological modifiers, and nutrition (Hersom et al., 2011).

Limitations to the Study

The researcher understands there is a chance that one beef producer may have taken the survey more than once given the possibility they received the survey link through multiple associations if they have multiple breed association memberships.

A major limitation to this study was the lack of participation from multiple prominent associations. This limitation leads the researcher to conclude the results to be representative to the association memberships respondents and not applicable to every beef breed association.

Additionally, the researcher understands there was a low response rate to the study and could sway the results to be more applicable to a smaller section of the membership than the entire membership of each association. The cause of the low response rate can be attributed to the time of year the survey was sent to producers, the survey link being a small portion of a larger news message, and the possibility the emails were ignored or sent to the receiver's junk/spam folder. The survey was sent to producers during the months of September and October 2022, which is the prime time for fall calving, fall harvest and the busy schedules of kids returning to school.

A further limitation of the study was the way in which the survey was disseminated through associations. Each participating association chose their own way to send the survey link to their membership. Some associations sent the survey in individual eblasts to their members

and other associations only agreed to sending the survey link in their news eblasts. The researcher believes this could have led to the low response rate as the receiver could have overlooked the survey link. The lack of control over how the survey was sent to producers and the lack of opportunity to send follow-up emails were the limitations to the survey dissemination factors of this study.

Additionally, the responses of the study had to be analyzed in an across-breed comparison vs. individual breed comparisons as some participating associations requested for responses to be kept anonymous and not analyzed individually.

Basic Assumptions

This study had the following assumptions: each participant understood the purpose of the study, each participant answered the survey questions with honesty and accuracy, each participant completed the survey once, each participant was an accurate representative of the target audience, and their response can be used to the future of beef breed association magazine production. Additionally, the researcher assumes each beef breed association disseminated the survey instrument to the target audience of this study.

Chapter 2 - Literature Review

Overview

The purpose of this chapter is to introduce the theoretical framework that guided this study and review literature relating to the focus of this study. The chapter begins with an inclusive summary of the theoretical framework – the uses and gratifications theory. Following the theory summary, this chapter reviews literature relating the theory to print magazines, social media, agricultural communications, and communication preferences among organization memberships. Finally, a summary of literature related to this study is provided.

Theoretical Framework

The theoretical framework that guided this study was the uses and gratifications theory, which is an audience-centered approach to research (Katz et al., 1973). Uses and gratifications focuses on understanding why and how individuals seek out certain media to satisfy their needs (Katz et al., 1973). The theory assumes individuals are not passive consumers of media, but instead, individuals have the power to choose the media they consume and integrate into their lives (Katz et al., 1973). Katz et al. (1973) concluded that the uses and gratifications approach is focused on the social and psychological origins of needs leading to media exposure and resulting in need gratifications. Levy and Windahl (1984) describes the uses and gratifications approach to research as considering individuals “active consumers” of media through audience activity. Audience participations in the communication process facilitates, limits, or otherwise influences the gratifications associated with media exposure (Levy & Windahl, 1984).

The theory assumes the consumer of media has clear intent of use and has the power to choose which media they consume (Katz et al., 1973). There are unique assumptions to the uses

and gratifications theory: 1) the audience is active and its media use is goal oriented, 2) the initiative in linking need gratification to a specific medium choice rests with the audience member, 3) the media compete with other resources for need satisfaction, 4) people have enough self-awareness of their media use, interests, and motives to be able to provide researchers with an accurate picture of that use, and 5) value judgements of media content can only be accessed by the audience (Katz et al., 1973). Katz et al. (1973) describes five goals for an audience's media consumption: 1) be informed or educated, 2) identify with characters of the situation in the media environment, 3) simplify entertainment, 4) enhance social interaction, and 5) escape the stresses of daily life.

Originally, the theory only included the gratifications obtained through audience use of media but has been updated to also include the gratifications sought through media use (Katz et al., 1973). Previous research has shown the gratifications sought by the audience are not always the gratifications obtained using media (Katz et al., 1973).

McLeod et al. (1982) concluded that gratifications sought, and gratifications obtained were different concepts and needed to be researched as such in future studies related to the uses and gratifications theory. Research during the 1970s began to put more attention on audience motivations and how the audience uses media to gratify their social and psychological needs (Liu, 2015). This change has been accredited to critics of the theory who identified four serious challenges to the theory, including 1) a vague conceptual framework; 2) a lack of precision in major concepts; 3) confused explanatory apparatus; and 4) failure to understand audience's perceptions of media content (Liu, 2015).

History of Uses and Gratifications Theory

In the early 1940s, researchers started to see patterns formed among radio listeners in the early use of the uses and gratifications theory (Lazarsfeld, 1940). Early uses and gratifications research focused on children using comics and the influence of the absence of newspapers during a strike (Katz et al., 1973). This increased the interest in psychological interpretations of the theory (Katz et al., 1973). Laswell (1948) introduced a four-functional interpretation of the capacity media served among an audience: surveillance, correlation, entertainment and cultural transmissions of society and individuals (Katz et al., 1973). According to Wimmer and Dominick (1994) the uses and gratifications theory originated when researchers were interested in understanding why audiences became involved with diverse forms of media. Many of the early uses and gratifications studies were descriptive in nature and classified the audience into several different categories (Liu, 2015).

Uses and gratifications research has evolved through various stages since the theory's introduction (Katz et al., 1973). Early studies focused on the reasons why people chose specific types of media, using the theory as an extension of the needs and motivation theory. Additionally, the studies included the development of the fraction of selection to be a formula to determine the mass media form an individual would select and the amount of gratification the user would experience (Katz et al., 1973). Many of the first studies focused on the exploration of the social and psychological variables associated with the theory and their patterns of consumption related to gratifications (Liu, 2015). Schramm et al. (1961) conducted a study related to children's use of television with the conclusion that television use among children was closely tied to their mental ability and relationships with family and friends. As research evolved, Klapper (1960) emphasized the importance of further analysis regarding the consequences of

media uses instead of describing media use. Radio listening was based upon the functions of companionship, relaxing, changing mood, providing useful news and information, and increasing social interaction (Liu, 2015). Researchers began to introduce personal characteristics such as race and social class into studies regarding audience consumption of media (Liu, 2015; Gerson, 1966; Greenburg & Dominick, 1969). During this period of uses and gratifications research, the focus changed from the traditional media effects, with the research focused on analysis of the audience playing an active role rather than a passive role in media use (Liu, 2015).

The second stage of the theory led to studying audience motives for watching certain programs and understanding the mass-media effects of their use. Uses of media could be grouped into four distinct categories: diversion, personal relationships, personal identity, and surveillance, and collaborative research started with a focus on how people saw mass media (Katz et al., 1973). The audience uses media for needs related to personal characteristics and their social environment when problems and solutions arise (Liu, 2015; Rosengren, 1974). Rosengren (1974) concluded the problems and solutions in the audience's lives resulted in different motives to use media and different gratification behavior (Liu, 2015). Additionally, Palmgreen and Rayburn (1979) identified the role of researchers in the future of the theory needing to integrate both gratifications and other factors related to media consumption. Media gratifications stem from three social origins identified by Blumler (1979): normative influences, social changes, and audience's reaction to a social situation. Furthermore, Blumler (1979) concluded cognitive motivation promotes information gain and motivation diversion promotes audience perceptions of entertainment media based on the accuracy of social portrayals.

Current Research in Uses and Gratifications

The current stage of research focuses on the link between why media is used and the achieved gratifications (Liu, 2015). The uses and gratifications approach to media was unpopular among researchers for decades; however, as the introduction of new telecommunications technology continues to happen, the theory has gained interest among the researchers (Liu, 2015). New digital media has three attributes for further exploration: interactivity, demassification, and asynchronicity (Liu, 2015). Williams et al. (1988) defines interactivity as “the degree to which participants in the communication process have control over, and can exchange roles in their mutual discourse” (p. 10). Further literature exploration identifies six dimensions of interactivity: threats, benefits, sociability, isolation, involvement, inconvenience, as user-oriented measures (Liu, 2015). An additional five dimensions were identified by Ha and James (1998): playfulness, choice, connectedness, information collection, and reciprocal communication. Heeter (1989) defined interactivity as a multidimensional concept including choice provided to users, user effort to seek information, actively responsive media to users, and the ability for users to add information to the system for others to access (Liu, 2015). While interactivity still causes limitations for digital media users, interactivity shows the degree of media use to respond to user demands (Liu, 2015). Demassification is the ability for the media user to select from a wide array of options and user control (Liu, 2015; Williams, 1988). Demassification showcases the allowance of new digital media for the ability of users to select messages that meet their needs (Liu, 2015). Asynchronicity is a concept that messages can be sent and received at different times and at the convenience of the user (Liu 2015). Users have more control of media consumption regarding digital messages rather than traditional means of communications (Liu, 2015). The uses and gratifications theory has adopted and adapted to change through its history and is a

theory that can be applied to the future of new communication technologies (Liu, 2015).

Audiences are now more actively referred to as “users” as their ability to make decisions and create content continues to increase (Liu, 2015). Media has grown from television and magazines to includes devices, channels, and dissemination of media, as users no longer only consume information; instead, they create and interact with the information available to them (Liu, 2015).

Liu (2015) states:

“The core assumption of uses and gratifications is that audience members are active, and their selection and use of media is purposive, goal directed and motivated to satisfy their social and psychological needs or desires” (Liu, 2015, p. 77).

Similar motivations for uses and gratifications of most media are consistent in the literature. Motivations include fulfilling the needs for information, personal identity, entertainment, and social interaction (Kim et al., 2015, Katz et al., 1973, McQuail, 1983).

Print Publications

Uses and gratifications provides many perspectives regarding what motivates audiences to use and adopt media (Kim et al., 2015). The theory has been studied extensively regarding TV and radio; however, Payne et al. (1988) is one of the only studies to apply the theory to magazines (Kim et al., 2015). Magazine readers experience different levels of motivation regarding diversion, interaction, and surveillance based on the type of magazines they are reading (Kim et al., 2015; Payne et al., 1988). Readers of trade magazines score higher on interaction and surveillance and lower on diversion compared to readers of consumer magazines (Payne et al., 1988).

Research involving uses and gratifications of print magazines lacks researcher attention, and the few studies focused on print magazines were either magazines compared to other print media or focused on weekly news magazines. Thus, research is scarce on monthly print magazines (Randle, 2003; Payne et al., 1988, Schmidt, 1980; LaFerle et al., 2000; Perse & Courtwright, 1993). Randle (2003) suggests researchers study the characteristics of an enjoyable reading experience in print vs. digital magazines as the characteristics have both theoretical and professional applications. Additionally, much research has been conducted on advertising effectiveness, but research needs to be conducted on reader satisfaction of editorial content in print magazines within the uses and gratification theoretical concept (Randle, 2003).

Digital Media

Dewing (2010) defines social media as an internet-based service in which users participate in online exchange. Social media examples include blogs, social network sites, media-sharing sites, and status-update services (Dewing, 2010). Verduyn (2017) identified Facebook, Twitter, Instagram, and LinkedIn as popular social network sites. The chief executive of Facebook, Mark Zuckerberg, revealed users spending an average of 50 minutes on Facebook and Instagram daily (Verduyn, 2017, Stewart, 2016). A study by Fox et al. (2016) found that disseminating information from a published journal on social media allows the content to meet a broader audience.

Whiting and Williams (2013) identified seven usage themes of social media: social interaction, information seeking, pass time, entertainment, relaxation, communicatory utility, and convenience utility. Social interaction is the use of social media to communicate and interact with other users (Whiting & Williams, 2013; Ko et al., 2005). The literature reveals similar

themes of social motivation, interpersonal utility, and companionship (Whiting & Williams, 2013; Korgaonkar & Wolin, 1999; Papacharissi & Rubin, 2000; Palmgreen & Rayburn, 1979).

Papacharissi and Rubin (2000) describe information seeking as an individual using social media to seek out information or for self-education. A similar theme of information motivation pertaining to how consumers use the internet for self-education and information was described in a study by Korgaonkar and Wolin (1999). Using social media to relieve boredom and occupy time falls in the theme of pass time (Whiting & Williams, 2013). Individuals who use social media to provide entertainment and enjoyment are providing an example of the theme of entertainment (Whiting & Williams, 2013). A similar theme of escapism was shown in the literature and described as pleasurable, fun, and enjoyable (Whiting & Williams, 2013; Korgaonkar & Wolin, 1999). Relaxation is the use of social media to relieve daily stress of the user (Whiting & Williams, 2013). While some studies group relaxation into the same theme (Korgaonkar & Wolin, 1999; Palmgreen & Rayburn, 1979), Whiting and Williams (2013) describe relaxation as relief from stress and entertainment for enjoyment.

Communicatory utility is the process of facilitating communication and sharing information with others (Whiting & Williams, 2013). Korgaonkar and Wolin (1999) describe a similar construct of socialization motivation; however, this theme focused on facilitating interpersonal communication and providing value to a conversation. Convenience utility is the use of social media for convenience of usefulness to the user (Whiting & Williams, 2013).

Additional themes of expression of opinions, information sharing, and surveillance/knowledge about others, were also identified by Whiting and Williams (2013). Expression of opinions is described as users using social media to share their opinions on various topics with others; information sharing is using social media to share information you find with

others; and the theme of surveillance/knowledge about others is using social media to watch the actions of others (Whiting & Williams, 2013).

Agricultural Communications

The uses and gratifications theory currently serves as the main theoretical framework of social media use both inside and outside of the agricultural industry (Daigle & Heiss, 2021). Many agricultural communications practitioners apply the uses and gratifications theory to understand how and why farmers do or do not utilize social media to support their farms (e.g., Daigle & Heiss, 2021; Phillips et al., 2018; Shaw et al., 2015). Phillips et al. (2018) concluded New Zealand farmers use social media for open conversation, strategy sharing, and as a place to acquire knowledge from like-minded individuals. Shaw et al. (2015) utilized a questionnaire to conclude farmers use social media tools that are like the tools utilized in their personal lives. A study regarding the use of social media among women farmers by Daigle & Heiss (2021) revealed women farmers are active users of media. Stafford et al. (2004) identified the implication of content, social, and process gratifications. Farmers can use social media to gather information and as a marketing strategy, as content gratification was a prevalent category among study participants (Daigle & Heiss, 2021). Farmers experience social gratifications by building relationships with other farmers and customers, as well as emotional support from fellow farmers sharing the struggles and joy of agricultural life (Daigle & Heiss, 2021). Process gratification is different when applied to farmers as they rarely ever use social media for enjoyment. Rather, they use social media as a tool to share their story and build customer loyalty (Daigle & Heiss, 2021).

Shaw et al. (2015) concluded a significant correlation of personal use of online communication tools to business use of the tools among farmers. Farmers using communication tools for their own personal use are more likely to adopt the same communication tools for their farming operations (Shaw et al., 2015). Additionally, farmers will discontinue use of a communication tool if there are no direct benefits to their business thus, relative advantage of the diffusion of innovation theory by Rogers (2003), is important to agricultural communicators when researching uses and gratifications among agricultural producers (Shaw et al., 2015).

Agriculturalists utilize social media for reasons directly related to the gratifications sought and obtained through social media. Agriculturalists are motivated to create and share content to provide accurate information for audience members who are unfamiliar with agricultural practices (White et al., 2014).

Meyers et al. (2015) found the consumer audience of agriculture has evolved as they use media such as blogs to achieve their needs. Agricultural blog readers' primary motivations are within the surveillance/guidance sub-construct of uses and gratifications (Meyers et al., 2015). Consumers of blog information enjoy using blogs, as they can gather information from a variety of sources and have a voice in conversation, whereas other media types do not make this a possibility (Smith, 2008; Meyers et al., 2015).

Livestock Publications

Naile & Cartmell (2009) found the importance of communicating science to agriculture producers and the use of magazines for disseminating industry-advancing information to producers will continue to increase as the livestock and agricultural industries grow. Farmers and ranchers continue to want information on the topics of animal nutrition, animal health, markets,

management, technology, and genetics (Foltz et al., 1996, Murphy, 1960). A study by Trotter (1975) found that audiences who agree with magazine editors are more likely to believe publications are created for individuals like them, which is true for livestock publications as they are limited by commodity interest. Livestock organization communicators are likely to have accurate perceptions of their specialized audience due to their positions within the industry and personal experiences. Editors of livestock publications can underestimate the importance of livestock publications in the flow of information from research to producer applicable concepts (Naile & Cartmell, 2009).

Summary

Uses and gratifications research has a presence in communications research through an audience-centered approach to digital technology use such as the internet, social media, TV, and radio. The theory has adapted over time to include a new focus on both the gratifications sought and obtained through the use of media. In recent studies, uses and gratifications in agricultural communications, has been tied to social media, farmers and ranchers, and consumers of agricultural information.

However, the literature reveals an absence of research of uses and gratifications of print magazines inside and outside of the agricultural industry. While print is a vital source of media, most research focuses on digital media as the majority of new media is internet-based. Additionally, this review of literature revealed a lack of research focused on communicating to beef producers outside of the Extension realm. Building upon the current focus of uses and gratification research, the researcher sought to address the gaps of literature in both print magazines and beef producer communications through the use of the methods indicated in the next chapter.

Chapter 3 - Methods

Overview

The previous chapter sought to provide information on the history of uses and gratifications theory, define the uses and gratifications implications of this study, describe a deeper understanding of association communication to members, and further state the implication of this research through a review of literature. This chapter provides an overview of the research methodology used to conduct this study including the research design, population and sample, instrumentation, data collection, and demographic information collected from study participants. The purpose of this study was to determine the uses and gratifications beef producers experience from the use of their beef breed association magazines. The research objectives used to direct this study are as follows:

1. Determine the information beef producers are receiving through the use of their beef breed association magazines.
2. Determine topics beef producers want communicated to them via magazines from their breed associations.
3. Determine the differences in uses and gratifications of beef breed association magazine use based on operation characteristics.
4. Determine producer use and perceptions of print vs. digital beef breed association magazines.

Research Design

This study followed a descriptive quantitative survey research design through the dissemination of a questionnaire instrument distributed to participants in the intended target audience: beef cattle breed association members. The descriptive research aimed to summarize the study participants' attitudes of the identified variables of the study (Siedleckli, 2020). The study intended to gather information about print vs. digital preferences of magazines; what beef producers use the magazines for; and the gratifications beef producers receive as they use magazines published by their beef breed associations; magazine and topic preferences; and operation characteristics.

Population and Sample

The target population of this study was members of United States beef breed associations. The researcher planned to survey members from each association with over 10,000 animal registrations (NPLC, 2017). The population was chosen as associations with over 10,000 animal registrations are expected to have a large membership. The associations meeting the criteria were the American Angus Association, American Brahman Breeders Association, American Gelbvieh Association, American International Charolais Association, American Hereford Association, American Shorthorn Association, American Simmental Association, Beefmaster Breeders United, International Brangus Breeders Association, North American Limousin Foundation, and the Red Angus Association of America. Table 3.1 shows the number of animal registrations for each association according to the NPLC Beef Statistics report published September 22, 2017.

Table 3.1

Number of Animal Registrations per Breed Association at 10,000 or greater.

Association	Number of Animal Registrations
American Angus Association	334,607
American Hereford Association	75,988
Red Angus Association of America	51,878
American Simmental Association	49,000
American International Charolais Association	34,025
American Gelbvieh Association	32,987
International Brangus Breeders Association	25,918
North American Limousin Foundation	22,000
American Shorthorn Association	15,865
Beefmaster Breeders United	15,000
American Brahman Breeders Association	11,368

The Kansas State University Institutional Review Board (IRB) approved this study prior to data collection (see Appendix A). The researcher sent an email to the 11 beef breed associations identified as potential study participants. Six associations agreed to participate– the American Gelbvieh Association, American Hereford Association, American Shorthorn Association, Beefmaster Breeders United, North American Limousin Foundation, and the Red Angus Association of America.

The study utilized nonprobability purposive and convenience sampling. Nonprobability sampling is a technique in which samples are selected in a matter not related to probability theory (Babbie, 2018). The researcher selected the sampling method due to the research situation not permitting the standards of probability being used for the large-scale social survey (Babbie, 2018). A more defined sampling method, purposive sampling, was used to guide this study. Purposive sampling is a sector of nonprobability sampling in which the selected population is

selected by the researcher based on their judgment of the participants which will be the best representatives. Additionally, convenience sampling was used as any individual in the selected population could agree to participate (Stratton, 2021). In this study, any member who received the survey through their beef breed association could choose to participate in the research. The researcher selected beef breed associations based on guidance from industry statistics (Table 3.1) and her personal experience with associations included in the study.

American Gelbvieh Association

Established in 1971, the American Gelbvieh Association (AGA) consists of more than 1,000 members with 1 million animals recorded in an animal registry database with 45,000 currently active Gelbvieh, Balancer®, and Gelbvieh-influenced females (American Gelbvieh Association, 2022). Gelbvieh cattle are a testimonial to the adaptation of the ever-changing dynamic of providing genetics to the robust beef industry (American Gelbvieh Association, 2022). The AGA currently ranks fifth in the number of registered animals among U.S. beef breed associations and is the largest Gelbvieh association globally (American Gelbvieh Association, 2022). Member recognition of the value Gelbvieh genetics have in crossbreeding programs motivates the AGA to continuously provide feasible avenues of animal registration for seedstock producers (American Gelbvieh Association, 2022). The mission statement of the association is:

“The American Gelbvieh Association (AGA) is dedicated to recording and promoting Gelbvieh, Balancer and Gelbvieh-influenced cattle, while providing members and their customers programs and services to advance the breed.”

The AGA has two official publications: the *Gelbvieh World* and *The Profit Picture*. Published nine times each year, the *Gelbvieh World* reaches approximately 4,500 AGA members

and bull buyers (American Gelbvieh Association, 2021). *The Profit Picture* is published in February and September, with both issues reaching an audience of 40,000 beef industry stakeholders representing more than nine million head of cattle in high-concentrated cattle areas of the United States (American Gelbvieh Association, 2021).

American Hereford Association

The American Hereford Association (AHA) is a beef breed association with more than 7,500 adult and junior members (American Hereford Association, 2019). The AHA collaborates with its subsidiaries, Certified Hereford Beef (CHB) LLC, Hereford Publications Inc. (HPI), and the American Beef Records Association (ABRA), to provide programs and services to association members and customers, to promote the Hereford breed and support youth, education, and research (American Hereford Association, 2019). The association's mission is to:

“Grow demand for Hereford genetics by delivering the highest quality and most efficient services to members and other progressive cattlemen in the areas of breed registry, genetic improvement, and education.”

The *Hereford World* became the official publication of the AHA after the merger of the American Polled Hereford Association (APHA) and the AHA (American Hereford Association, 2022). Nearly 5,600 subscribers enjoy the *Hereford World* eleven times each year through seven issues. An additional 20,000 commercial cattle producers receive a copy of the four tabloid-type issues in the months of January, February, August, and October (American Hereford Association, 2022).

American Shorthorn Association

The American Shorthorn Association (ASA) records around 15,000 animals each year while maintaining more than 20,000 head in the association's whole herd registry and serves more than 6,000 junior and senior members (American Shorthorn Association, 2019). The ASA strives to increase interest in Shorthorn genetics for commercial producers, educate and empower association members, support the American Junior Shorthorn Association, and invest in opportunities to enable breed improvement (American Shorthorn Association, 2019). The mission statement of the American Shorthorn Association is as follows:

“The mission of the American Shorthorn Association is to serve all members and enhance the value of the Shorthorn breed by managing data, maintaining the integrity of the herdbook, educating members, and communicating the value of Shorthorn cattle resulting in the expanded use of Shorthorn genetics in the U.S. beef industry.”

Shorthorn Country serves as the official publication of the ASA and is published eleven times each year. The magazine readership consists of approximately 3,500 Shorthorn members, buyers and enthusiasts in the United States, Canada, and other foreign countries (Shorthorn Country, 2022).

Beefmaster Breeders United

Founded in 1961, Beefmaster Breeders United (BBU) is among the top five largest United States beef breed registries in membership and ranks among the top ten in animal registrations (Beefmaster Breeders United, n.d.). During the time period of 1974-1998, BBU membership grew from 300 to almost 7,000 members (Beefmaster Breeders United, n.d.). The association is guided by the principles of continuously striving for breed improvement, never compromising

integrity, and always striving to expand, encourage, and educate (Beefmaster Breeders United, n.d.). According to BBU, the association's mission is as follows:

“BBU's mission is to enhance breeder's ability to raise and promote cattle based upon the founding “Six Essentials.” Disposition, Fertility, Weight, Conformation, Hardiness, and Milk Production.”

The Beefmaster Cowman serves as the official publication of BBU (Beefmaster Cowman, n.d.).

The magazine communicates the message of the world's largest and most progressive Beefmaster association to purebred breeders, commercial cattlemen, and Beefmaster bull customers (Beefmaster Cowman, n.d.).

North American Limousin Foundation

The North American Limousin Foundation (NALF) is a beef cattle breed association with a vision to make Limousin genetics valued by their members and favored by commercial producers, creating industry demand with consumer preference through sound science, information, and technology (North American Limousin Foundation, n.d.). The mission of the NALF is:

“The North American Limousin Foundation is in the business of customer service and genetic evaluation while providing tools to enhance members profitability and maintaining integrity of the herdbook. Through programs and services, it is NALF's goal to have member's products be the Continental common denominator in progressive commercial beef producer's crossbreeding programs for mainstream markets.”

Limousin365 is the official magazine of the NALF (North American Limousin Foundation, n.d.).

Limousin365 is published four times each year. The Spring Sale Edition is published in January,

the Herd Sire Edition is published in April, the Breeder Directory Edition is published in July, and the Fall Sale Edition is published in October (North American Limousin Foundation, n.d.).

Red Angus Association of America

The Red Angus Association of America (RAAA) was founded in 1954 to establish the first performance registry of the beef industry (Red Angus Association of America, 2018). The RAAA ignores the short-term pressure of industry fads through a far-sighted approach of beef production attaining popularity in the commercial sector of the beef industry due to the ability to take risks and be early adopters of new technologies (Red Angus Association of America, 2018). The RAAA has a mission to equip their members to be progressive cattle producers (Red Angus Association of America, 2018).

“Our mission is to provide members and their customers with innovative programs and services, to continue advancing the quality, reliability, and value of Red Angus and Red Angus-influenced seedstock used in the commercial beef industry.”

The *Red Angus Magazine* (RAM) is the official publication of the RAAA and is published 10 times each year with combined issues for May/June and July/August (Red Angus Association of America, 2022). The RAM strives to tell the Red Angus story in an efficient manner using sound science and beef production knowledge to create the RAAA as a trusted source of beef industry information (Red Angus Association of America, 2022). One of RAAA’s core policies is dedicated to the editorial content of the RAM:

“The RAAA does not take a role in the marketing of an individual member’s cattle, therefore, the *Red Angus Magazine* editorial content has a commercial and technical focus. Individual seedstock supplier articles are avoided.”

The RAM is distributed to over 12,000 RAAA members and stakeholders. Any customer having a Red Angus bull transferred to them receives a free one-year subscription to the magazine. The RAM reaches an expanded mailing of 15,000 stakeholders twice a year with the January and September issues (Red Angus Association of America, 2022).

Instrumentation

Validity

The researcher used content and face validity to measure the validity of the survey instrument. Content validity evaluates to what extent an instrument includes all relevant parts needed to meet the desired measure of the construct (Nikolopoulou, 2022); and the degree to which the instrument components represent the general population of the study (Straub et al., 2004). Content validity for this study was measured by input from a panel of experts. To measure if the instrument was relevant and appropriate for the desired measurements on the surface, the researcher measured face validity of the survey instrument (Bhandari, 2022). Face validity was used to assess the instrument for consistency, formatting, clarity, feasibility, and readability (Taherdoost, 2016). A panel of experts unanimously agreed to the survey instrument meeting face validity.

The survey was tested with a panel of experts consisting of two agricultural communications and education assistant professors, one professor and head of Extension and research center, one beef breed association magazine editor, and one beef breed association magazine publisher. The panel reviewed the survey for content accuracy, theoretical guided questions, survey flows, and skip logic implementations. The panel provided the researcher with feedback to simplify questions, add additional information between question sets, and adjust

question design to allow for more developed variables, improving the opportunity for in-depth statistical analysis. Examples of the feedback provided to the researcher included adding the options of “to learn about marketing strategies” and “personal interest stories on the success of breeders cattle” to the questions asking why beef producers use their beef breed association magazines, adding a question block between the questions asking why producers use their beef breed association magazines and the questions asking what topics beef producers want included in their beef breed association magazines, and adjusting the traits listed in the primary trait focus question to be more inclusive of all beef operations in the United States.

Reliability

A pilot survey was developed for the survey instrument and received 224 responses from members of the American Shorthorn Association (ASA). The first 27 responses from ASA were initially analyzed for reliability. Additionally, the full 224 responses were also analyzed for reliability. Survey reliability was tested in SPSS using coded variables from the instrument. A Cronbach’s alpha statistical analysis was ran on both questions of reasons for use of beef cattle breed association magazines, print vs. digital preference, and why beef producers want print magazines. Laerd (2015) identifies Cronbach’s alpha as a measure of internal reliability for Likert questions in a survey to determine if the scale is reliable. The Cronbach’s alpha of the Likert-scale question pertaining to reasons for use of beef cattle breed association magazines for association-related topics was 0.705. The Likert-scale question regarding the reasons for use of beef cattle breed association magazines for management topics had a Cronbach’s alpha of 0.730. The Cronbach’s alpha of the Likert-scale question for print vs. digital magazine preference was

0.760. The Likert-scale question asking why beef producers want print magazines had a Cronbach's alpha of 0.856. Thus, Cronbach's alpha results deemed the questionnaire reliable.

Data Collection

The primary communications staff member at each of the six breed associations was contacted for study participation. Each association received assistance in developing the message to be sent to the association members with a personalized survey link. Custom URLs were created for each association to allow the researcher to track which association's members were responding. The American Shorthorn Association, Beefmaster Breeders United, and the North American Limousin Foundation distributed the survey through one eblast with their membership. The American Hereford Association distributed the survey through their newsletter once to their membership. The Red Angus Association of America distributed the survey through their newsletter twice and through two eblasts to their memberships. The American Gelbvieh Association distributed the survey through newsletter once and once through an eblast. All survey links were made available to the membership of the respective breed association for one week with the exception of the American Shorthorn Association membership. The American Shorthorn Association membership was intended to serve as pilot survey participants only; however, with an impressive response rate of 206 responses in the first 24 hours of survey availability the researcher decided to use the first 27 responses to test survey reliability and the remaining responses to be used in the main data analysis of the study.

The survey was distributed through Qualtrics, a survey platform provided to researchers by Kansas State University. The survey began with an introduction to who the researchers were, what data topics the survey instrument would ask, and the required information from the Kansas

State University Research Compliance Office. Additionally, the survey landing page explained survey participation was voluntary with no known risks and all collected information would be anonymous and confidential.

Participants were presented each question on an individual page as the researchers chose the design based on the strengths discussed by Dillman et al. (2014). According to Dillman et al. (2014), single-question-per-page survey designs present many strengths to researchers including: the control over question appearance, responses are submitted and stored in the distribution platform after each question, and the design is best for questionnaires with complex skip patterns. The survey instrument used in this study contained multiple skip patterns to present participants with follow-up questions for more specific information on why they prefer a specific type of magazine. If a participant was between the ages of 18-21, they were presented with questions about their beef breed junior association membership and communication preferences as 18-21 year olds meet junior association membership requirements. Respondents were sent to the end of the survey if they selected the option of not receiving any beef breed association magazines, as their responses were not taken into consideration for the study. Researchers looked at the potential negative aspect of the survey design, resulting in a longer time for participants to complete the survey (Couper et al., 2001; Manfreda et al., 2002; as cited in Dillman et al., 2014). The risks of respondents forgetting the context of the question before was taken into consideration; however, the risk did not seem to be significant enough for the researcher to alter the survey instrument design. The survey questions requiring respondents to remember the context of the question before were in the first half of the questionnaire thus, the presence of survey fatigue should have been minimal.

Demographic Information

To better understand the population of study participants, the researcher developed survey questions to determine specific characteristics of the respondents. The demographic questions sought to understand the beef breed association(s) participants were members of, which beef breed association magazines participants received, the participant's herd size, primary operation type, role in the operation, herd description, primary trait focus, gender, and age. The demographic information of participants allowed the researcher to understand the representation of the data to the intended population.

Personal Characteristics

Survey participants ($n = 361$) indicated their gender. Most survey participants were male ($n = 243$, 67.3%), while the remaining participants were female ($n = 110$, 30.5%) or preferred not to identify their gender ($n = 8$, 2.2%).

Most survey participants were 50-59 years old ($n = 82$, 23.1%), 19.4% ($n = 69$) were 60-69 years old, 17.5% ($n = 62$) were 40-49 years old, 16.6% ($n = 59$) were 30-39 years old, 10.4% ($n = 37$) were 70-79 years old, 9.6% ($n = 34$) were 22-29 years old, while 2.5% ($n = 9$) were 18-21 years old qualifying for junior association memberships, and 0.9% ($n = 3$) of respondents were 80-89 years old.

Most survey participants were a member of the American Shorthorn Association ($n = 165$), followed by Beefmaster Breeders United ($n = 78$), the Red Angus Association of America ($n = 66$), other associations not included in the study ($n = 57$), the American Gelbvieh Association ($n = 46$), American Hereford Association ($n = 37$), and the North American Limousin Foundation ($n = 15$).

Operation Characteristics

Table 3.2 identifies the primary state of operation location of study participants. The top five states represented in the sample were Texas ($n = 52$, 14.2%), Missouri ($n = 31$, 8.5%), Oklahoma ($n = 26$, 7.1%), Kansas ($n = 22$, 6.0%), and Ohio ($n = 20$, 5.5%). One ($n = 1$, 0.3%) participant's operation was primarily located outside of the United States.

Table 3.2*Primary State of Operation Location of Study Participants (N = 365)*

Primary State	Frequency	Valid Percent	Primary State	Frequency	Valid Percent
Alabama	8	2.2	Montana	7	1.9
Alaska	0	0	Nebraska	14	3.8
Arizona	1	0.3	Nevada	0	0
Arkansas	6	1.6	New Hampshire	0	0
California	9	2.5	New Jersey	0	0
Colorado	7	1.9	New Mexico	1	0.3
Connecticut	1	0.3	New York	2	0.5
Delaware	0	0	North Carolina	3	0.8
Florida	5	1.4	North Dakota	4	1.1
Georgia	4	1.1	Ohio	20	5.5
Hawaii	0	0	Oklahoma	26	7.1
Idaho	3	0.8	Oregon	3	0.8
Illinois	11	3.0	Pennsylvania	3	0.8
Indiana	13	3.6	Rhode Island	0	0
Iowa	15	4.1	South Carolina	3	0.8
Kansas	22	6.0	South Dakota	11	3.0
Kentucky	17	4.7	Tennessee	12	3.3
Louisiana	6	1.6	Texas	52	14.2
Maine	1	0.3	Utah	0	0
Maryland	3	0.8	Vermont	1	0.3
Massachusetts	0	0	Virginia	4	1.1
Michigan	5	1.4	Washington	3	0.8
Minnesota	8	2.2	West Virginia	2	0.5
Mississippi	5	1.4	Wisconsin	10	2.7
Missouri	31	8.5	Wyoming	2	0.5
Outside of U.S.	1	0.3			

Most survey participants run a cow-calf operation ($n = 216$, 59.2%), while 37.8% ($n = 138$) run a seedstock operation; 2.5% ($n = 9$) operations were identified as an operation type not included in the survey, and one ($n = 1$, 0.3%) backgrounder and feedlot operations were represented in the study.

Most survey participants are the owner of their operation ($n = 247$, 67.7%), 27.7% ($n = 101$) of study participants are the co-owner of the operation, 2.7% ($n = 10$) participants serve as the operation operator, while 1.6% ($n = 6$) of study participants identified their role in the operation as an option not included in the survey, and one ($n = 1$, 0.3%) survey participant identified themselves as a showman in the operation.

Participants identified their average beef cattle operation herd size based on herd size numbers adopted from the National Cattlemen's Beef Association membership application. The most prevalent herd size was 1-100 head of cattle ($n = 259$, 71.3%), 19.3% ($n = 70$) herds consist of 101-250 head of cattle, and 5.2% ($n = 19$) are herds with 251-500 head of cattle. 1.7% ($n = 6$) of herds have 501-750 head, 1.1% ($n = 4$) have 751-1000 head, while only 0.6% ($n = 2$) of herds have 1001-1250 head, and 0.3% ($n = 1$) are herds consisting of 1251-1500 head, 1751-2000 head, and 2000+ head of cattle respectively.

Most herds were described as purebred – registered herds ($n = 284$, 78.5%), while the remaining herds were described as crossbred ($n = 32$, 8.8%), composite/hybrid ($n = 28$, 7.7%), or as purebred – non-registered herds ($n = 18$, 5.0%).

Most survey participants focus on maternal traits ($n = 244$, 67.4%), while the remaining participants focus on growth traits ($n = 79$, 21.8%) or carcass traits ($n = 39$, 10.8%).

Study participants indicated their years of beef production experience. 20.4% ($n = 74$) have 20-29 years of beef production experience, 19.1% ($n = 69$) have 40-49 years, 17.4% ($n = 63$) have 30-39 years, 17.1% ($n = 62$) have 10-19 years, 11.3% ($n = 41$) have 0-9 years, 10.0% ($n = 36$) 50-59 years, 4.1% ($n = 15$) have 60-69 years, and 0.6% ($n = 2$) of survey participants have 70-79 years of beef production experience.

Data Analysis

Upon the completion of data collection through the Qualtrics platform, data were reported using the Report function in Qualtrics. Data were exported to SPSS for further analysis. Data were analyzed using the Kruskal- Wallis H test, which is a rank-based nonparametric test to determine statistically significant differences between two or more groups of independent variables. This test was used instead of a one-way ANOVA as the data failed the assumption of normally distributed data (Laerd, 2015). Descriptive statistics were used along with the Kruskal Wallis H test to address the following research objectives:

1. Determine the information beef producers are receiving through the use of their beef breed association magazines.
2. Determine topics beef producers want communicated to them via magazines from their breed associations.
3. Determine the differences in uses and gratifications of beef breed association magazine use based on operation characteristics.
4. Determine producer use and perceptions of print vs. digital beef breed association magazines.

Summary

This chapter restated the purpose of the research study and discussed the research objectives guiding this study. The research design, data collection procedures, and participant demographic information data was provided. Additionally, the researcher provided the methods of data analysis used and how the study reached validity. The next chapter provides results for each research objective discussed in this chapter.

Chapter 4 - Results

Overview

This chapter provides the results of this descriptive quantitative research study that sought to understand the uses and gratifications of beef cattle breed association magazines for United States beef cattle producers. Data was collected and analyzed to meet the following research objectives:

1. Determine the information beef producers are receiving through the use of their beef breed association magazines.
2. Determine topics beef producers want communicated to them via magazines from their breed association.
3. Determine the differences in uses and gratifications of beef breed association magazine use based on operation characteristics.
4. Determine producer perceptions and uses of print vs. digital beef breed association magazines.

Research Objective One

Research objective one sought to determine the information beef producers are receiving through the use of their beef breed association magazines. Using a five-point Likert scale ranging from *1 = Strongly Disagree* to *5 = Strongly Agree*, participants were asked to consider why they use beef breed association magazines and identify their level of agreement with their use related to the identified topics. There were 10 prompts that were split into two categories: beef cattle breed association topics and management decisions. The five prompts in one category focused on beef cattle breed association topics, which read as follows: “I use beef breed association

magazines to learn more about association news, marketing programs, events, member services, and foundation opportunities” ($n = 362$, $M = 4.46$, $SD = .795$), “I use beef breed association magazines to learn more about branded beef programs” ($n = 361$, $M = 3.69$, $SD = 1.005$), “I use beef breed association magazines to learn about breed improvement strategies” ($n = 363$, $M = 4.34$, $SD = .802$), “I use beef breed association magazines to stay informed about junior events and show champions” ($n = 354$, $M = 3.92$, $SD = 1.113$), and “I use beef breed association magazines to learn about marketing strategies and upcoming sales through producer sale advertisements” ($n = 364$, $M = 4.38$, $SD = .817$)

Of the 362 respondents for the magazine usage category of beef cattle breed association topics, ($n = 332$, 91.7%) said they either “Strongly Agree” or “Somewhat Agree” with the following statement: “I use beef breed association magazines to learn about association news, marketing programs, events, member services, and foundation opportunities.” Additionally, about 90.6% ($n = 327$) of the respondents indicated they either strongly agree or somewhat agree with the prompt: “I use beef breed association magazines to learn about marketing strategies and upcoming sales through producer advertisements.” Approximately 89.3% ($n = 324$) of participants indicated they “Strongly Agree” or “Somewhat Agree” with the following statement: “I use beef breed association magazines to learn about breed improvement strategies.” Also, 70.3% ($n = 249$) of respondents indicated they strongly agree or somewhat agree with the prompt: “I use beef breed association magazines to stay informed about junior events and show champions” while 18.9% ($n = 67$) neither agree nor disagree with the prompt. Finally, about 61.8% ($n = 223$) of participants “strongly agree” or “somewhat agree” with the statement: “I use beef breed association magazines to learn more about branded beef programs” while

approximately 28.2% ($n = 102$) neither agree nor disagree, and about 10% ($n = 36$) of participants “somewhat disagree” or “strongly disagree” with the prompt (Table 4.1).

Table 4.1*Participants' Use of Beef Breed Association Magazines (N = 364)*

Prompt	Frequency					<i>M</i>	<i>SD</i>
	Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree		
Learn about association news, marketing programs, events, member services, and foundation opportunities. ^a	214	118	18	7	5	4.46	.795
Learn more about branded beef programs. ^b	77	146	102	21	15	3.69	1.005
Learn about breed improvement strategies. ^c	177	147	28	6	5	4.34	.802
Stay informed about junior events and show champions. ^d	131	118	67	20	18	3.92	1.113
Learn about marketing strategies and upcoming sales through producer sale advertisements. ^e	195	132	24	8	5	4.38	.817

Note. Five-point Likert Scale questions; 1 = strongly disagree to 5 = strongly agree.

^a (n = 362)

^b (n = 361)

^c (n = 363)

^d (n = 354)

^e (n = 364)

Using a five-point Likert scale ranging from *1 = Strongly Disagree* to *5 = Strongly Agree*, participants were asked to consider why they use beef breed association magazines and identify their level of agreement with their use related to the identified management topics. There were five prompts, which read as follows: “I use beef breed association magazines to learn more about success stories from other cattle producers” ($n = 364$, $M = 4.01$, $SD = .881$), “I use beef breed association magazines to gain information on new technological advancements for my operation” ($n = 364$, $M = 4.23$, $SD = .842$), “I use beef breed association magazines to receive nutritional guidance for my cattle” ($n = 362$, $M = 3.65$, $SD = 1.112$), “I use beef breed association magazines to better understand genetic selection practices” ($n = 364$, $M = 4.15$, $SD = .929$), and “I use beef breed association magazines to learn more about current events in the beef industry” ($n = 364$, $M = 4.25$, $SD = .896$)

Of the 364 participants for this prompt, 84.1% ($n = 306$) said they either “Strongly Agree” or “Somewhat Agree” with the following statement: “I use beef breed association magazines to learn more about current events in the beef industry.” Additionally, 87% ($n = 317$) of the respondents indicated they either strongly or somewhat agree with the following statement: “I use beef breed association magazines to gain information on new technological advancements for my operation.” 81.3% ($n = 296$) indicated they either strongly agree or somewhat agree with the prompt: “I use beef breed associations magazines to better understand genetic selection practices.” Furthermore, 75% ($n = 274$) participants either strongly agree or somewhat agree with the prompt: “I use beef breed association magazines to learn more about success stories from other cattle producers” while 19.5% ($n = 71$) of participants “neither agree nor disagree” with the prompt. Finally, of the 362 respondents for the prompt: “I use beef breed association magazines to receive nutritional guidance for my cattle” approximately 60.8% ($n =$

220) of respondents either strongly agreed or somewhat agreed; 14.9% ($n = 54$) either somewhat disagreed or strongly disagreed; and 24.3% ($n = 88$) of respondents neither agreed nor disagreed (Table 4.2).

Table 4.2

Participants' Use of Beef Breed Association Magazines ($N = 364$)

Prompt	Frequency					<i>M</i>	<i>SD</i>
	Strongly Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Strongly Disagree		
Learn more about success stories from other cattle producers.	115	159	71	15	4	4.01	.881
Gain information on new technological advancements for my operation.	151	166	31	10	6	4.23	.842
Receive nutritional guidance for my cattle. ^a	88	132	88	34	20	3.65	1.112
Better understand genetic selection practices.	150	146	47	13	8	4.15	.929
Learn more about current events in the beef industry.	171	135	43	7	8	4.25	.896

Note. Five-point Likert Scale questions; 1 = strongly disagree to 5 = strongly agree.

^a ($n = 362$)

Research Objective Two

Research objective two sought to determine topics beef producers wanted to see more of in their breed association magazines including association-related topics and topics not tied to associations. Survey participants were presented with a question asking them to rank topics related to management practices based on their preference of topics to be seen more in their beef cattle breed association magazines. With the lowest mean indicating a higher desire to see more information, breed improvement strategies ($M = 1.90$, $SD = 1.29$) is the highest-ranked topic beef producers want to see most in beef breed association magazines. Genetic selection ($M = 3.55$, $SD = 1.82$) and technological advancements ($M = 3.64$, $SD = 1.50$) are also topics beef producers ranked highly. Additionally, beef producers want to see more producer success stories ($M = 4.37$, $SD = 2.08$), nutritional guidance ($M = 4.48$, $SD = 1.92$), and current event happenings ($M = 5.01$, $SD = 1.97$). Branded beef programs ($M = 6.18$, $SD = 1.57$) and junior activities ($M = 6.86$, $SD = 1.81$) had the highest average scores of the options, meaning they were ranked lowest on the list of topics producers wanted to see more of in association magazines. Results available in Table 4.3.

Table 4.3*Topics Beef Producers Want to See More of in Association Magazines (N = 207)*

Topic	<i>M</i>	<i>SD</i>
Breed Improvement Strategies	1.90	1.29
Genetic Selection	3.55	1.82
Technology Advancements	3.64	1.50
Producer Success Stories	4.37	2.08
Nutrition Guidance	4.48	1.92
Current Event Happenings	5.01	1.97
Branded Beef Programs	6.18	1.57
Junior Activities	6.86	1.81

Table 4.4 shows association related topics producers ranked in terms of what they would like to see more of in their beef breed association magazines directly related to associations. The lowest means indicated the highest preference in a topic. Association news ($M = 3.43$, $SD = 1.79$), association marketing programs ($M = 3.43$, $SD = 1.97$), and member services ($M = 3.52$, $SD = 1.95$) ranked the highest in terms of what association-related topics beef producers want to see more in the magazine. Additionally, beef producers averagely ranked updates about association events ($M = 4.00$, $SD = 1.81$) and see sale advertisements ($M = 4.03$, $SD = 2.08$). Foundation opportunities and show champions are of interest by beef producers but not as highly averaged in the ranking. Participants had the opportunity to provide other ($M = 6.82$, $SD = 2.07$) topics they want to see more often in their magazines however, no written data was provided by respondents.

Table 4.4*Topics Beef Producers Want to See More of in Association Magazines (N = 204)*

Topic	<i>M</i>	<i>SD</i>
Association News	3.43	1.79
Association Marketing Programs	3.43	1.97
Member Services	3.52	1.95
Association Events	4.00	1.81
Sale Advertisements	4.03	2.08
Foundation Opportunities	5.16	2.04
Show Champions	5.60	2.07
Other	6.82	2.07

Research Objective Three

Research objective three sought to determine the differences in uses and gratifications of beef breed association magazine use based on operation characteristics.

Type of Operation

A Kruskal-Wallis H test was run to determine if there were differences in using beef breed association magazines to learn about **association news, marketing programs, events, member services, and foundation opportunities** between different types of operations: cow-calf, seedstock, backgrounder, feedlot, and other (show cattle) operation types identified by study participants. Distributions in differences of use were not similar for all herd types, as assessed by visual inspection of a boxplot. The mean rank of differences in using beef breed association magazines to learn about association news, marketing programs, events, member services, and foundation opportunities was not statistically significantly different between groups, $\chi^2(4) = 2.364, p = .669$.

A Kruskal-Wallis H test was run to determine if there were differences in using beef breed association magazines to learn more about **branded beef programs** between different types of operations: cow-calf, seedstock, backgrounder, feedlot, and other operation types (show cattle) identified by study participants. Distributions in differences were not similar for all herd types, as assessed by visual inspection of a boxplot. The mean rank of differences in using beef breed association magazines to learn more about branded beef programs was statistically significantly different between groups, $\chi^2(4) = 14.180, p = .007$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted *p*-values are presented. This post hoc analysis revealed no statistically significant differences in using beef breed association magazines to learn more about branded beef programs between any operation type combinations.

A Kruskal-Wallis H test was run to determine if there were differences in using beef breed association magazines to learn about **breed improvement strategies** between different types of operations: cow-calf, seedstock, backgrounder, feedlot, and other operation types (show cattle) identified by study participants. Distributions in differences of use were not similar for all herd types, as assessed by visual inspection of a boxplot. The mean rank of differences in using beef breed association magazines to learn about breed improvement strategies was not statistically significantly different between groups, $\chi^2(4) = 1.994, p = .737$.

A Kruskal-Wallis H test was run to determine if there were differences in using beef breed association magazines to stay informed about **junior events and show champions** between different types of operations: cow-calf, seedstock, backgrounder, feedlot, and other operation types identified by study participants. Distributions in differences of use were not similar for all herd types, as assessed by visual inspection of a boxplot. The mean rank of

differences in using beef breed association magazines to stay informed about junior events and show champions was not statistically significantly different between groups, $\chi^2(4) = 7.108$, $p = .130$.

A Kruskal-Wallis H test was run to determine if there were differences in using beef breed association magazines to learn about **marketing strategies and upcoming sales through producer advertisements** between different types of operations: cow-calf, seedstock, backgrounder, feedlot, and other operation types identified by study participants. Distributions in differences of use were not similar for all herd types, as assessed by visual inspection of a boxplot. The mean rank of differences in using beef breed association magazines to learn about marketing strategies and upcoming sales through producer advertisements was not statistically significantly different between groups, $\chi^2(4) = 1.998$, $p = .736$.

A Kruskal-Wallis H test was run to determine if there were differences in using beef breed association magazines to learn more about **success stories from other cattle producers** between different types of operations: cow-calf, seedstock, backgrounder, feedlot, and other operation types identified by study participants. Distributions in differences of use were not similar for all herd types, as assessed by visual inspection of a boxplot. The mean rank of differences in using beef breed association magazines to learn more about success stories from other cattle producers was not statistically significantly different between groups, $\chi^2(4) = 9.455$, $p = .051$.

A Kruskal-Wallis H test was run to determine if there were differences in using beef breed association magazines to learn about **new technological advancements** between different types of operations: cow-calf, seedstock, backgrounder, feedlot, and other operation types identified by study participants. Distributions in differences of use were not similar for all herd

types, as assessed by visual inspection of a boxplot. The mean rank of differences in using beef breed association magazines to learn about new technological advancements was not statistically significantly different between groups, $\chi^2(4) = 2.177, p = .703$.

A Kruskal-Wallis H test was run to determine if there were differences in using beef breed association magazines to receive **cattle nutritional guidance** between different types of operations: cow-calf, seedstock, backgrounder, feedlot, and other operation types identified by study participants. Distributions in differences were not similar for all herd types, as assessed by visual inspection of a boxplot. The mean rank of differences in using beef breed association magazines to receive cattle nutritional guidance were statistically significantly different between groups, $\chi^2(4) = 13.949, p = .008$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p -values are presented. This post hoc analysis revealed statistically significant differences between seedstock (mean rank = 3.42) and cow-calf (mean rank = 3.79) ($p = .037$) operations, but not between any other group combinations.

A Kruskal-Wallis H test was run to determine if there were differences in using beef breed association magazines to better understand **genetic selection practices** between different types of operations: cow-calf, seedstock, backgrounder, feedlot, and other operation types identified by study participants. Distributions in differences of use were not similar for all herd types, as assessed by visual inspection of a boxplot. The mean rank of differences in using beef breed association magazines to better understand genetic selection practices was not statistically significantly different between groups, $\chi^2(4) = 4.506, p = .342$.

A Kruskal-Wallis H test was run to determine if there were differences in using beef breed association magazines to learn more about **current events in the beef industry** between

different types of operations: cow-calf, seedstock, backgrounder, feedlot, and other operation types identified by study participants. Distributions in differences were not similar for all herd types, as assessed by visual inspection of a boxplot. The mean rank of differences in using beef breed association magazines to learn more about current events in the beef industry were statistically significantly different between groups, $\chi^2(4) = 13.700, p = .008$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p -values are presented. This post hoc analysis revealed statistically significant differences between seedstock (mean rank = 4.31) and other (mean rank = 4.89) ($p = .045$), but not between any other group combinations.

Role in Operation

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn about **association news, marketing programs, events, member services, and foundation opportunities** between groups that differed in operation role: owner ($n = 246$), co-owner ($n = 101$), operator ($n = 8$) showman ($n = 1$), and other ($n = 6$) roles. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about association news, marketing programs, events, member services, and foundation were all the same ($Mdn = 5.00$), the differences were not statistically significant $\chi^2(4) = 5.499, p = .240$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **branded beef programs** between groups that differed in operation role: owner ($n = 245$), co-owner ($n = 100$), operator ($n = 9$) showman ($n = 1$), and other ($n = 6$) roles. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines

to learn more about branded beef programs were all the same ($Mdn = 4.00$), the differences were not statistically significant $\chi^2(4) = .916, p = .922$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn about **breed improvement strategies** between groups that differed in operation role: owner ($n = 247$), co-owner ($n = 100$), operator ($n = 9$) showman ($n = 1$), and other ($n = 6$) roles. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about breed improvement strategies increased from showman ($Mdn = 3.00$), to owner, co-owner, and operator ($Mdn = 4.00$), to other roles ($Mdn = 5.00$), but the differences were not statistically significant $\chi^2(4) = 3.123, p = .538$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to stay informed about **junior events and show champions** between groups that differed in operation role: owner ($n = 241$), co-owner ($n = 98$), operator ($n = 9$) showman ($n = 1$), and other ($n = 5$) roles. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to stay informed about junior events and show champions were all the same ($Mdn = 4.00$), the differences were not statistically significant $\chi^2(4) = 3.656, p = .455$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn about **marketing strategies and upcoming sales through producer advertisements** between groups that differed in operation role: owner ($n = 247$), co-owner ($n = 101$), operator ($n = 9$) showman ($n = 1$), and other ($n = 6$) roles. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about marketing

strategies and upcoming sales through producer advertisements increased from co-owner ($Mdn = 4.00$), to owner, operator, showman, and other roles ($Mdn = 5.00$), but the differences were not statistically significant $\chi^2(4) = 2.732, p = .604$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **success stories from other cattle producers** between groups that differed in operation role: owner ($n = 247$), co-owner ($n = 101$), operator ($n = 9$) showman ($n = 1$), and other ($n = 6$) roles. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn more about success stories from other cattle producers were all the same ($Mdn = 4.00$), the differences were not statistically significant $\chi^2(4) = .354, p = .986$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to gain information on **new technological advancements** between groups that differed in operation role: owner ($n = 247$), co-owner ($n = 101$), operator ($n = 9$) showman ($n = 1$), and other ($n = 6$) roles. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to gain information on new technological advancements increased from owner, co-owner, and showman ($Mdn = 4.00$), to operator and other roles ($Mdn = 5.00$), but the differences were not statistically significant $\chi^2(4) = 6.486, p = .166$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to receive **cattle nutritional guidance** between groups that differed in operation role: owner ($n = 245$), co-owner ($n = 101$), operator ($n = 9$) showman ($n = 1$), and other ($n = 6$) roles. Distributions of differences for use were similar for all groups, as

assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to receive nutritional guidance increased from showman ($Mdn = 2.00$), to other ($Mdn = 3.00$), to owner, co-owner, and operator roles ($Mdn = 4.00$), but the differences were not statistically significant $\chi^2(4) = 2.828, p = .587$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to better understand **genetic selection practices** between groups that differed in operation role: owner ($n = 247$), co-owner ($n = 101$), operator ($n = 9$) showman ($n = 1$), and other ($n = 6$) roles. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to better understand genetic selection practices were all the same ($Mdn = 4.00$), the differences were not statistically significant $\chi^2(4) = .587, p = .965$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **current events in the beef industry** between groups that differed in operation role: owner ($n = 247$), co-owner ($n = 101$), operator ($n = 9$) showman ($n = 1$), and other ($n = 6$) roles. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn more about current events in the beef industry were all the same ($Mdn = 4.00$), the differences were not statistically significant $\chi^2(4) = 2.559, p = .634$.

Herd Size

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn about **association news, marketing programs, events, member services, and foundation opportunities** between groups that differed in their

average herd size: 1-100 head ($n = 257$), 101-250 head ($n = 69$), 251-500 head ($n = 19$), 501-750 head ($n = 6$), 751-1000 head ($n = 4$), 1001-1250 head ($n = 2$), 1251-1500 head ($n = 1$), 1751-2000 head ($n = 1$), and 2000+ head ($n = 1$) average herd sizes. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about association news, marketing programs, events, member services, and foundation opportunities increased from 251-500 head ($Mdn = 4.00$), to 501-750 head and 1001-1250 head ($Mdn = 4.50$), to 1-100 head, 101-250 head, 751-1000 head, 1251-1500 head, 1751-2000 head, and 2000+ head ($Mdn = 5.00$). but the differences were not statistically significant $\chi^2(8) = 3.228, p = .919$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **branded beef programs** between groups that differed in their average herd size: 1-100 head ($n = 255$), 101-150 head ($n = 70$), 251-500 head ($n = 19$), 501-750 head ($n = 6$), 751-1000 head ($n = 4$), 1001-1250 head ($n = 2$), 1251-1500 head ($n = 1$), 1501-1750 head ($n = 1$), and 2000+ head ($n = 1$) average herd sizes. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about branded beef programs increased from 251-500 head ($Mdn = 3.00$), to 501-750 head and 751-1000 head ($Mdn = 3.50$), to 1-100 head, 101-250 head, 1001-1250 head, and 2000+ head ($Mdn = 4.00$), to 1251-1500 head and 1751-2000 head ($Mdn = 5.00$), but the differences were not statistically significant $\chi^2(8) = 9.002, p = .342$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **breed improvement strategies** between groups that differed in their average herd size: 1-100 head ($n = 257$), 101-150 head ($n = 70$), 251-

500 head ($n = 19$), 501-750 head ($n = 6$), 751-1000 head ($n = 4$), 1001-1250 head ($n = 2$), 1251-1500 head ($n = 1$), 1751-2000 head ($n = 1$), and 2000+ head ($n = 1$) average herd sizes.

Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about breed improvement strategies increased from 101-250 head, 251-500 head, 501-750 head, 1001-1250 head, and 2000+ head ($Mdn = 4.00$) to 1-100 head, 751-1000 head, 1251-1500 head, and 1751-2000 head ($Mdn = 5.00$), but the differences were not statistically significant $\chi^2(8) = 9.448$, $p = .306$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to stay informed about **junior events and show champions** between groups that differed in their herd size: 1-100 head ($n = 250$), 101-150 head ($n = 69$), 251-500 head ($n = 18$), 501-750 head ($n = 6$), 751-1000 head ($n = 4$), 1001-1250 head ($n = 2$), 1251-1500 head ($n = 1$), 1751-2000 head ($n = 1$), and 2000+ head ($n = 1$) average herd sizes. Distributions of differences were similar for all groups, as assessed by visual inspection of a boxplot. Media differences were statistically significantly different between groups, $\chi^2(8) = 17.300$, $p = .027$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. This post hoc analysis revealed statistically significant differences in using beef breed association magazines to stay informed about junior events and show champions between the 251-500 head (3.00) and 1-100 head (4.00) ($p = .037$) herd sizes, but not any other herd size combinations.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn about **marketing strategies and upcoming sales through producer advertisements** between groups that differed in their herd size: 1-100 head

($n = 258$), 101-150 head ($n = 70$), 251-500 head ($n = 19$), 501-750 head ($n = 6$), 751-1000 head ($n = 4$), 1001-1250 head ($n = 2$), 1251-1500 head ($n = 1$), 1751-2000 head ($n = 1$), and 2000+ head ($n = 1$) average herd sizes. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about marketing strategies and upcoming sales through producer advertisements increased from 251-500 head, 1001-1250 head, and 1751-2000 head ($Mdn = 4.00$), to 1-100 head, 101-250 head, 501-750 head, 751-1000 head, 1251-1500 head, and 2000+ head ($Mdn = 5.00$), but the differences were not statistically significant $\chi^2(8) = 8.238, p = .411$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **success stories from other cattle producers** between groups that differed in their herd size: 1-100 head ($n = 258$), 101-150 head ($n = 70$), 251-500 head ($n = 19$), 501-750 head ($n = 6$), 751-1000 head ($n = 4$), 1001-1250 head ($n = 2$), 1251-1500 head ($n = 1$), 1751-2000 head ($n = 1$), and 2000+ head ($n = 1$) average herd sizes. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn more about success stories from other cattle producers increased from 1751-2000 head ($Mdn = 3.00$), to 1001-1250 head ($Mdn = 3.50$), to 1-100 head, 101-250 head, 251-500 head, 501-750 head, and 751-1000 head ($Mdn = 4.00$), to 1251-1500 head and 2000+ head ($Mdn = 5.00$), but the differences were not statistically significant $\chi^2(8) = 10.296, p = .245$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to gain information on **new technological advancements** for my operation between groups that differed in their herd size: 1-100 head ($n = 258$), 101-150 head ($n = 70$), 251-500 head ($n = 19$), 501-750 head ($n = 6$), 751-1000 head ($n = 4$), 1001-1250 head

($n = 2$), 1251-1500 head ($n = 1$), 1751-2000 head ($n = 1$), and 2000+ head ($n = 1$) average herd sizes. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to gain information on new technological advancements for my operation increased from 1001-1250 head ($Mdn = 3.50$), to 1-100 head, 101-250 head, 251-500 head, and 501-750 head ($Mdn = 4.00$), to 751-1000 head, 1251-1500 head, 1751-2000 head, and 2000+ head ($Mdn = 5.00$), but the differences were not statistically significant $\chi^2(8) = 9.747, p = .283$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to receive **cattle nutritional guidance** for cattle between groups that differed in their herd size: 1-100 head ($n = 257$), 101-150 head ($n = 69$), 251-500 head ($n = 19$), 501-750 head ($n = 6$), 751-1000 head ($n = 4$), 1001-1250 head ($n = 2$), 1251-1500 head ($n = 1$), 1751-2000 head ($n = 1$), and 2000+ head ($n = 1$) average herd sizes. Distributions of differences were similar for all groups, as assessed by visual inspection of a boxplot. Median differences were statistically significantly different between groups, $\chi^2(8) = 18.802, p = .016$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. This post hoc analysis revealed no statistically significant differences in using beef breed association magazines to receive nutritional guidance between any herd size combinations.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to better understand **genetic selection practices** between groups that differed in their herd size: 1-100 head ($n = 258$), 101-150 head ($n = 70$), 251-500 head ($n = 19$), 501-750 head ($n = 6$), 751-1000 head ($n = 4$), 1001-1250 head ($n = 2$), 1251-1500 head ($n = 1$), 1751-2000 head ($n = 1$), and 2000+ head ($n = 1$) average herd sizes. Distributions

of differences were similar for all groups, as assessed by visual inspection of a boxplot. Median differences were statistically significantly different between groups, $\chi^2(8) = 17.793, p = .023$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. This post hoc analysis revealed no statistically significant differences in using beef breed association magazines to better understand genetic selection practices between any herd size combinations.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **current events in the beef industry** between groups that differed in their herd size: 1-100 head ($n = 258$), 101-150 head ($n = 70$), 251-500 head ($n = 19$), 501-750 head ($n = 6$), 751-1000 head ($n = 4$), 1001-1250 head ($n = 2$), 1251-1500 head ($n = 1$), 1751-2000 head ($n = 1$), and 2000+ head ($n = 1$) average herd sizes. Distributions of differences were similar for all groups, as assessed by visual inspection of a boxplot. Median differences were statistically significantly different between groups, $\chi^2(8) = 17.004, p = .030$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. This post hoc analysis revealed no statistically significant differences in using beef breed association magazines to learn more about current events in the beef industry between any herd size combinations.

Herd Description

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn about **association news, marketing programs, events, member services, and foundation opportunities** between groups that differed in herd

description: composite/hybrid ($n = 28$), crossbred ($n = 31$), purebred – registered ($n = 283$) and purebred – non-registered ($n = 17$) herds. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about association news, marketing programs, events, member services, and foundation were all the same ($Mdn = 5.00$), the differences were not statistically significant $\chi^2(3) = .474, p = .925$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **branded beef programs** between groups that differed in herd description: composite/hybrid ($n = 28$), crossbred ($n = 31$), purebred – registered ($n = 281$) and purebred – non-registered ($n = 18$) herds. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about branded beef programs were all the same ($Mdn = 4.00$), the differences were not statistically significant $\chi^2(3) = 4.631, p = .201$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to stay informed about **junior events and show champions** between groups that differed in herd description: composite/hybrid ($n = 28$), crossbred ($n = 30$), purebred-registered ($n = 275$) and purebred – non-registered ($n = 18$) herds. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Median differences of using beef breed association magazines to stay informed about junior events and show champions were statistically significantly different between groups, $\chi^2(3) = 8.262, p = .041$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. This post hoc analysis revealed statistically significant differences in using beef breed association magazines to

stay informed about junior events and show champions between the crossbred (3.50) and purebred-registered (4.00) ($p = .079$), but not between any other group combination.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **breed improvement strategies** between groups that differed in herd description: composite/hybrid ($n = 28$), crossbred ($n = 31$), purebred – registered ($n = 283$) and purebred – non-registered ($n = 18$) herds. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about breed improvement strategies increased from purebred – registered and purebred – non-registered herds ($Mdn = 4.00$), to composite/hybrid and crossbred herds ($Mdn = 5.00$), but were not statistically significant $\chi^2(3) = 5.044, p = .169$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn about **marketing strategies and upcoming sales through producer advertisements** between groups that differed in herd description: composite/hybrid ($n = 28$), crossbred ($n = 31$), purebred – registered ($n = 284$) and purebred – non-registered ($n = 18$) herds. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about marketing strategies and upcoming sales through producer advertisements increased from crossbred and purebred – non-registered herds ($Mdn = 4.00$), to composite/hybrid and purebred - registered herds ($Mdn = 5.00$), but were not statistically significant $\chi^2(3) = 3.055, p = .391$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn about **success stories from other cattle producers**

between groups that differed in herd description: composite/hybrid ($n = 28$), crossbred ($n = 31$), purebred – registered ($n = 284$) and purebred – non-registered ($n = 18$) herds. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about success stories from other cattle producers increased from composite/hybrid, crossbred and purebred – registered herds ($Mdn = 4.00$), to purebred – non-registered herds ($Mdn = 4.50$), but were not statistically significant $\chi^2(3) = 7.294, p = .063$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to gain information on **new technological advancements** between groups that differed in herd description: composite/hybrid ($n = 28$), crossbred ($n = 31$), purebred – registered ($n = 284$) and purebred – non-registered ($n = 18$) herds. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to gain information on new technological advancements increased from purebred – registered herds ($Mdn = 4.00$), to composite/hybrid and purebred – non-registered herds ($Mdn = 4.50$), to crossbred herds ($Mdn = 5.00$), but were not statistically significant $\chi^2(3) = 6.837, p = .077$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to receive **cattle nutritional guidance** between groups that differed in herd description: composite/hybrid ($n = 27$), crossbred ($n = 31$), purebred-registered ($n = 284$) and purebred – non-registered ($n = 18$) herds. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Median differences of using beef breed association magazines to receive nutritional guidance were statistically significantly different between groups, $\chi^2(3) = 10.477, p = .015$. Pairwise comparisons were performed

using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. This post hoc analysis revealed statistically significant differences in using beef breed association magazines to receive cattle nutritional guidance between the purebred – registered (4.00) and crossbred (5.00) ($p = .009$), but not between any other group combination.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to better understand **genetic selection practices** between groups that differed in herd description: composite/hybrid ($n = 28$), crossbred ($n = 31$), purebred – registered ($n = 284$) and purebred – non-registered ($n = 18$) herds. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to better understand genetic selection practices increased from composite/hybrid, purebred – registered, and purebred – non-registered herds ($Mdn = 4.00$), to crossbred herds ($Mdn = 5.00$), but were not statistically significant $\chi^2(3) = 5.646$, $p = .130$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **current events in the beef industry** between groups that differed in herd description: composite/hybrid ($n = 28$), crossbred ($n = 31$), purebred – registered ($n = 284$) and purebred – non-registered ($n = 18$) herds. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn more about current events in the beef industry increased from composite/hybrid, purebred – registered, and purebred – non-registered herds ($Mdn = 4.00$), to crossbred herds ($Mdn = 5.00$), but were not statistically significant $\chi^2(3) = 2.532$, $p = .470$.

Trait Focus

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn about **association news, marketing programs, events, member services, and foundation opportunities** between groups that differed in their trait focus: maternal ($n = 243$), growth ($n = 79$), and carcass ($n = 37$) traits. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about association news, marketing programs, events, member services, and foundation were all the same ($Mdn = 5.00$), the differences were not statistically significant $\chi^2(2) = .211, p = .900$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **branded beef programs** between groups that differed in their trait focus: maternal ($n = 242$), growth ($n = 78$), and carcass ($n = 38$) traits. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn more about branded beef programs were all the same ($Mdn = 4.00$), the differences were not statistically significant $\chi^2(2) = 2.629, p = .269$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **breed improvement strategies** between groups that differed in their trait focus: maternal ($n = 243$), growth ($n = 79$), and carcass ($n = 38$) traits. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about breed improvement strategies increased from maternal traits ($Mdn = 4.00$), to growth and carcass traits ($Mdn = 5.00$), but were not statistically significant $\chi^2(2) = 3.865, p = .145$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to stay informed about **junior events and show champions** between groups that differed in their trait focus: maternal ($n = 238$), growth ($n = 76$), and carcass ($n = 37$) traits. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to stay informed about junior events and show champions were all the same ($Mdn = 4.00$), the differences were not statistically significant $\chi^2(2) = 2.059, p = .357$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn about **marketing strategies and upcoming sales through producer advertisements** between groups that differed in their trait focus: maternal ($n = 244$), growth ($n = 79$), and carcass ($n = 38$) traits. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn about marketing strategies and upcoming sales through producer advertisements were all the same ($Mdn = 5.00$), the differences were not statistically significant $\chi^2(2) = 2.236, p = .327$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **success stories from other cattle producers** between groups that differed in their trait focus: maternal ($n = 244$), growth ($n = 79$), and carcass ($n = 38$) traits. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to learn more about success stories from other cattle producers were all the same ($Mdn = 4.00$), the differences were not statistically significant $\chi^2(2) = 1.068, p = .586$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to gain information on **new technological advancements** for my operation between groups that differed in their trait focus: maternal ($n = 244$), growth ($n = 79$), and carcass ($n = 38$) traits. Distributions of differences for use were similar for all groups, as assessed by visual inspection of a boxplot. Differences of using beef breed association magazines to gain information on new technological advancements increased from maternal and growth traits ($Mdn = 4.00$), to carcass traits ($Mdn = 5.00$), but were not statistically significant $\chi^2(2) = 4.053, p = .132$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to receive **cattle nutritional guidance** between groups that differed in their trait focus: maternal ($n = 244$), growth ($n = 78$), and carcass ($n = 37$) traits. Distributions were similar for all groups, as assessed by visual inspection of a boxplot. Median differences of using beef breed association magazines were statistically significantly different between groups, $\chi^2(2) = 10.658, p = .005$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p -values are presented. This post hoc analysis revealed statistically significant differences in using beef breed association magazines to receive cattle nutrition guidance between the maternal (4.00) and growth (4.00) ($p = .031$) trait focus groups, and the maternal (4.00) and carcass (4.00) ($p = .044$) trait focus groups, but not any other group combination.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to better understand **genetic selection practices** between groups that differed in their trait focus: maternal ($n = 244$), growth ($n = 79$), and carcass ($n = 38$) traits. Distributions of differences for use were similar for all groups, as assessed by visual

inspection of a boxplot. Differences of using beef breed association magazines to better understand genetic selection practices were all the same ($Mdn = 4.00$), the differences were not statistically significant $\chi^2(2) = 4.137, p = .126$.

A Kruskal-Wallis H test was conducted to determine if there were differences in using beef breed association magazines to learn more about **current events in the beef industry** between groups that differed in their trait focus: maternal ($n = 244$), growth ($n = 79$), and carcass ($n = 38$) traits. Distributions were similar for all groups, as assessed by visual inspection of a boxplot. Median differences of using beef breed association magazines were statistically significantly different between groups, $\chi^2(2) = 8.515, p = .014$. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p -values are presented. This post hoc analysis revealed statistically significant differences in using beef breed association magazines to learn more about current events in the beef industry the maternal (4.00) and growth (5.00) ($p = .029$) trait focus groups, but not between the carcass trait focus (5.0) or any other trait focus combination.

Research Objective Four

Research objective four sought to determine producer perceptions and use of print vs. digital beef breed association magazines. For this study, participants were asked to indicate their format preference of beef breed association magazines: print or digital. Participants were then presented with a five-point Likert scale to display statements regarding why they preferred their desired format. Table 4.5 describes the format preferences of beef producers regarding beef breed association magazines. Most participants preferred print magazines ($n = 347, 95.1\%$), while the remaining respondents indicated they preferred digital magazines ($n = 18, 4.9\%$).

Table 4.5*Beef Producer Magazine Format Preference (N = 365)*

Format	Frequency	Valid Percent
Print	347	95.1
Digital	18	4.9

Survey participants who selected a print preference were directed to a question asking why they preferred beef breed association magazines in a print format. Beef producers strongly agree their beef breed association magazines in print are easier to read ($n = 341$, $M = 4.72$, $SD = .541$), convenient ($n = 341$, $M = 4.57$, $SD = .685$), and accessible ($n = 344$, $M = 4.52$, $SD = .833$). Additionally, beef producers agree printed beef breed association magazines are portable ($n = 339$, $M = 4.46$, $SD = .864$), do not require internet access ($n = 339$, $M = 4.40$, $SD = .999$), and are timely ($n = 332$, $M = 3.96$, $SD = 1.071$). Table 4.6 displays the data

Table 4.6*Beef Producer Print Magazine Preferences*

Preference	<i>M</i>	<i>SD</i>	Interpretation
It is easier to read. ^a	4.72	.541	Strongly agree
It is convenient. ^a	4.57	.685	Strongly agree
It is accessible. ^b	4.52	.833	Strongly agree
It is portable. ^c	4.46	.864	Agree
It does not require internet access. ^b	4.40	.999	Agree
It is timely. ^d	3.96	1.071	Agree

Note: Mean and standard deviation were calculated from a Likert scale where 5 = strongly agree and 1 = strongly disagree. Real Limits: 1.00 to 1.49 = *Strongly disagree*, 1.50 to 2.49 = *Somewhat disagree*, 2.50 to 3.49 = *Neither agree nor disagree*, 3.50 to 4.49 = *Somewhat agree*, 4.50 to 5.00 = *Strongly agree*.

^a (*n* = 341)

^b (*n* = 344)

^c (*n* = 339)

^d (*n* = 332)

Respondents who selected a preference for beef breed association magazines in a digital format were directed to a question for their preferences regarding the digital magazine. Beef producers strongly agree digital magazines are portable (*n* = 17, *M* = 4.59, *SD* = .712) and timely (*n* = 17, *M* = 4.59, *SD* = .712). Additionally, beef producers agree digital magazines are convenient (*n* = 17, *M* = 4.47, *SD* = .717), accessible (*n* = 17, *M* = 4.35, *SD* = .862), easier to read on the go (*n* = 17, *M* = 3.94, *SD* = 1.029) and help the environment (*n* = 16, *M* = 3.69, *SD* = 1.138). Data available in Table 4.7.

Table 4.7*Beef Producer Digital Magazine Preferences (N = 17)*

Preference	<i>M</i>	<i>SD</i>	Interpretation
It is portable.	4.59	.712	Strongly agree
It is timely.	4.59	.712	Strongly agree
It is convenient.	4.47	.717	Agree
It is accessible.	4.35	.862	Agree
It is easier to read on the go.	3.94	1.029	Agree
It helps the environment. ^a	3.69	1.138	Agree

Note: Mean and standard deviation were calculated from a Likert scale where 5 = strongly agree and 1 = strongly disagree. Real Limits: 1.00 to 1.49 = *Strongly disagree*, 1.50 to 2.49 = *Somewhat disagree*, 2.50 to 3.49 = *Neither agree nor disagree*, 3.50 to 4.49 = *Somewhat agree*, 4.50 to 5.00 = *Strongly agree*.

^a (*n* = 16)

Conclusion

These results are further assessed to provide conclusions and recommendations for beef cattle breed associations and future research in Chapter 5.

Chapter 5 - Conclusions, Discussions, and Recommendations

Overview

This chapter discusses the findings of this research study as it relates to past literature and provides future research recommendations. The findings of this study aim to benefit both science communication to the producer, as well as efficient investment by breed associations in magazine production, which may assist in mitigating the cost of magazine production. The conclusions, discussions, and recommendations presented in this chapter are guided by the following research objectives:

1. Determine the information beef producers are receiving through the use of their beef breed association magazines.
2. Determine topics beef producers want communicated to them via messages from their breed associations.
3. Determine the differences in uses and gratifications of beef breed association magazine use based on operation characteristics.
4. Determine producer uses and perception of print vs. digital beef breed association magazines.

Editorial Topics Guide Magazine Use

Research objective one sought to determine the information beef producers are receiving through the use of their beef breed association magazines. Most study participants strongly agreed or somewhat agreed to using beef cattle breed association magazines for most of the topics listed in the survey instrument. Beef cattle producers use their beef cattle breed association magazines to learn more about their association news, marketing programs, and events;

marketing strategies and upcoming sales; breed improvement strategies; current events in the beef industry; and technological advancements for their operations. These findings align with previous findings from Foltz et al. (1996) and Murphy (1960) as popular topics of magazine use among beef producers include animal nutrition, technology, markets, genetics, and reproduction. While beef cattle producers did not indicate as strong of use for learning about genetic selection practices and success stories of other beef producers, there is no reason to exclude these topics from the magazines as they do promote a strong use to obtain gratifications. The results of this study indicated average use of the beef cattle breed association magazines to learn about junior events, branded beef programs, and receiving nutritional guidance; however, based on previous studies, the topics are still important to the beef producers using the magazines, but the topics do not indicate the most information-seeking use of the magazines or gratifications obtained from use (Katz et al., 1973). The data should be used by communications staff at beef cattle breed associations to determine how often a certain topic is included in the magazine and how the inclusion of certain topics increase the use of the magazines.

Editorial Topics Desired by Beef Producers

Research objective two sought to determine topics beef producers want more information about via magazines from their breed association. Magazines are an important source of information for beef producers related to management and production practices (Naile & Cartmell II, 2009). The information needs of beef producers include animal nutrition, health, markets, management, technology, genetics, and reproduction (Naile & Cartmell II, 2009; Foltz et al., 1996; Murphy, 1960). Magazine editors are cognizant of the information they want their audience to receive and have perception about the use of specialized information for their

specific audience (Naile & Cartmell II, 2009; Fowler & Smith, 1981). The insights of magazine editors can define the media's role in the individual uses of the magazine for information (Naile & Cartmell II, 2009; Wiegman et al., 1989). The results of this study indicate that beef producers most prefer more information regarding breed improvement strategies, genetic selection, and technology advancements. The results of this study are supported by the findings of previous studies by Foltz et al. (1996) and Murphy (1960). Livestock magazine editors generally possess strong understandings of the information needs of their audience (Naile & Cartmell II, 2009). While the topics of branded beef programs and junior activities were not highly ranked to be seen more in this study, further research needs to be conducted to understand if beef producers are receiving the correct amount of information regarding these topics or if they want these topics included in the magazines less often. Communicators in beef cattle breed associations have accurate perceptions of their audience due to their association's involvement in the industry and their personal beef industry experience; however, it is recommended that communicators not underestimate the importance of topics to beef producers through their publications (Naile & Cartmell II, 2009).

Provide Editorial Applicable to Magazine Readership

Research objective three sought to determine the differences in uses and gratifications of beef breed association magazine use based on operation characteristics. When beef cattle breed association communications staff are deciding which editorial to include in their magazines, they should understand the goals and characteristics of their readership to create editorial applicable to them. This study provided a spread of representation of association members and led to the conclusion that most beef cattle producers reading the magazines are focused on advancing the

breed through the use of information provided by the association that can influence their registered- purebred cow-calf operations. The majority of study participants are focused on advancing maternal traits in their operations which are important to advancing the cow-calf operations of the producers. While the majority of beef producers represented in the results of this study are producing either registered or non-registered purebred cattle, there is still an important representation of commercial producers looking to capitalize on heterosis and hybrid vigor, which still may be important topics to include in the beef cattle breed association magazines. While the majority of beef cattle breed association magazine editorial should be focused on advancing the purebred breed of the association, it is still important to include editorial for all beef producers as they can still contribute to breed improvement through magazine use. Additionally, many beef producers who use beef cattle breed association magazines are smaller seedstock producers who need information catered to production efficiency of their operations. The production decisions made by seedstock producers effect the beef industry for 10 years (Mckinnon & Snodgrass, 2009), thus, editorial content should be applicable to seedstock producers as they are the majority of the readership and have a large impact on advancing their breed of cattle and beef industry. Magazine readership response to information that is relevant to their operations and disseminated in a timely manner increases the impact of the information (Naile & Cartmell, 2009; Grunig, 1980; Murphy, 1960).

The Future of Print Magazines

Research objective four sought to determine producer perceptions and uses of print vs. digital beef breed association magazines. Analyzing the format preference of beef cattle breed association magazines, the study determined the mode in which beef cattle producers are

consuming the information included in the magazines. Overwhelmingly, beef cattle producer survey respondents prefer to receive their beef cattle breed association magazines in a print format. The same results were found in a study with Michigan dairy producers as most of their producers prefer the printed version of their magazine (McCarthy et al., 2008). While some beef producers are generally more satisfied with the convenience and timeliness of digital magazines, beef producers in this study prefer the ease of reading and accessibility of the print magazines. Beef producers are willing to receive their magazines in a less-timely fashion as it obtains more gratifications sought through the use of the print magazine. The results for print magazines being highly preferred by beef cattle producers reflects the uses and gratifications theory as individuals seek media sources to satisfy their individual needs (Ruth-McSwain, 2008). Beef cattle producers seek out their beef cattle breed association magazines to satisfy their need to learn more information about the beef industry and their association offerings. Additional findings from McCarthy et al. (2008) can be applied to this study as both the printed and digital versions of the Michigan Dairy Review are utilized by their producers. The researchers suggest keeping in touch with magazine readership about their communication preferences and for communication practitioners to make informed upgrades to the publication gradually in both formats to not favor one audience (McCarthy et al., 2008).

Recommendations

For Beef Cattle Breed Associations

Beef cattle breed associations are seeking a further understanding of why their members use their magazines and how to best fit the editorial content to their readership. A vast majority of study participants prefer print magazines, and beef breed associations need to take this

information into account when considering their communication outreach. Vergot III et al. (2005) also found that print magazines are a crucial method to communicate with beef producers. The results of this study reveal that beef cattle producers use their association magazines to seek information about many important topics affecting their management decisions. Beef cattle breed association members use their association magazines to learn about association news, marketing programs, events, member services, and foundation opportunities; marketing strategies and upcoming sales through producer advertisements; and to learn about breed improvement strategies. Beef producers seek gratifications of information-seeking regarding their association, opportunities to expand their herds, and knowledge pertaining to methods to improve the breed of their cattle. Additionally, the beef producers who are reading the beef breed association magazines want more of the topics included that make them use the magazines to start.

The results of this study reveal most of the survey respondents are operating registered – purebred cattle herds of 250 head or less with a maternal trait focus. Beef cattle breed associations should use this knowledge to guide the editorial content of their magazines. Registered – purebred cattle producers work diligently to collect data on each of their animals from birth and through their lifetime in their operation (Farm Credit of the Virginias, 2022). Registered – purebred cattle producers provide the data to their beef cattle breed association to enhance the knowledge of the breed based on animal performance (Farm Credit of the Virginias, 2022). Beef cattle breed associations know registered – purebred cattle producers are guiding the future of their breed and rely on the association for guidance on how to move their operations forward by producing high-quality animals. Beef cattle breed associations should consider to including editorial in their magazines that focuses on the majority of their readership regarding capitalizing on maternal traits in small registered – purebred cattle herds.

It is recommended for beef cattle breed associations to learn the communication preferences of their junior membership so the association can share information with and develop the future breeders and members of their association. If a beef cattle breed association wants to alter their communication strategies in a digital space, they should understand their junior membership more deeply, to guide their communication decisions. All ages of survey respondents preferred print magazines.

Based on the results of this study and implications of prior literature, it is recommended that beef cattle breed associations continue to print their monthly magazines for their membership as all ages of survey respondents preferred print magazines. An overwhelming majority of respondents prefer a print version of their beef cattle breed association magazine(s) as they are easy to read, convenient, and accessible. Beef cattle breed associations need to communicate with their members in the methods that generate the highest interactions. According to this study's survey respondents, print is the best method of communication.

Recommendations For Future Research

A limitation of this study was the lack of participation from members of beef cattle breed associations with growth and carcass trait focus. The participation of these associations would have led to a higher response rate with a wider variety of results based on operation characteristics and potentially different outcomes of magazine use. A larger number of responses would lead the researcher to conducting additional statistical analysis that could have more influence on the results for each individual association instead of analyzing the data for all associations together. This additional analysis could be used in the future to guide a content

analysis of the association magazines for editorial topics and how it meets the uses and gratifications revealed in this study.

If a researcher chose to replicate this study in the future, it is recommended they are uniform in the survey dissemination method. Although the researcher had little control over link dissemination, this study revealed associations that sent the survey link in an individual email experienced a higher response rate compared to associations who grouped the survey link in with other association news. Ideally, the survey should be disseminated with each association using the survey follow-up methods suggested by Dillman et al. (2014) to increase exposure to the instrument link. Furthermore, the survey could be disseminated in a print format to association memberships through an insert in the monthly breed association magazines as it would reach the target audience through the use of the researched media.

A future research topic of interest would be to study if editorial content of the beef breed association magazines is read with more methods of dissemination such as, posting an individual link to an editorial article in a social media post for the association's digital audience. The beef cattle breed associations in this study have an active presence on social media and could capitalize on reaching more association members and potential association members by curating social media posts to direct the audience to use the monthly magazine from the association. Additionally, junior membership was not well represented in the current study and could be the target audience of a future study. The researcher could analyze the best method of informing junior members of breed association magazine content through the traditional print magazine and social media. The findings from this study could guide the communication strategy of the association for growing the knowledge of their younger members. An implementation of the

Diffusion of Innovations theory (Rogers, 2003), a theoretical framework focused on the adoption of new technologies and media could be used to guide this future research study.

Additionally, a content analysis of the editorial design, length, and date of publication could be conducted to understand if the use of beef cattle breed association magazines would increase if editorial was more prevalent to specific topics at the time of year when the readership begin to think of the subject. For example, topics regarding managing cattle nutrition in drought should be published at the beginning of a potential drought season instead of during the middle of the drought when management decisions have already been made. Publishing information early could have a larger influence in beef cattle producer management than when the information is published later.

Summary

This chapter provided conclusions and discussions regarding the statistical significance of each research objective. The researcher concluded that beef cattle producers prefer to use their magazines in a print format to learn more information about association news, marketing strategies, and breed improvement strategies. The researcher suggests for beef cattle breed associations to use the results of this study to guide editorial content. Additionally, a qualitative content analysis of magazine editorial is recommended for future research.

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Appendix A - IRB Approval

Appendix B - Survey Instrument